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- 13.—**Biernat, G.** Sur trois espèces nouvelles de Brachiopodes du 'Calcaire à *Stringocephalus*' des Mts. de Ste-Croix. *Acta Geol. Polon.* **3** 1953: 299-324 pls. 1, 2, in Polish. (Resumé in Russian and in French, sep. pagination 109-117.)
- 14.—**Bolger, R. C. & Prouty, C. E.** Upper Devonian and Mississippian stratigraphy of Cameron County, Pennsylvania. *Proc. Pa. Acad. Sci.* **27** 1953: 125-129. (Brachiopods listed.)
- 15.—**[Borovikov, L. I.]** [Main pattern of the stratigraphy, vulcanism and tectonics in the lower Paleozoic of Dzhez-Kazgan-Ulutausk region of the Western part of Central Kazakhstan]. *C.R. Acad. Sci. U.R.S.S. n.s.* **85** 1 1952: 189-190. [In Russian.] (Brachiopods mentioned.)
- 16.—**[Botchkovski, F. A.]** [Conditions of deposit of layers C_1^2 and C_2^2 in Krasnoarmeysk coal bearing region of the Don Basin.] *C.R. Acad. Sci. U.R.S.S. n.s.* **90** 6 1953: 1103-1106. [In Russian.] (Brachiopods mentioned.)
- Bradley, J. S.** *see* Newell, N.
- 17.—**Bramkamp, R. A. & Steineke, M.** Stratigraphical Introduction. Pt. I of Arkell, W. J. *Jurassic Ammonites from Jebel Tuwaiq, Central Arabia.* *Philos. Trans. Roy. Soc. London B.* **236** 633 1952: 242-256. (Brachiopods mentioned.)
- Brena, C.** *see* Ronchetti, C. R.
- 18.—**Brown, I. A.** Permian Spirifers from Tasmania. *J. Roy. Soc. N.S.W.* **86** 2 1953: 55-63 2 pls.
- 19.—**Brown, I. A.** *Martiniopsis* Waagen from the Salt Range, India. *J. Roy. Soc. N.S.W.* **86** 4 1953: 100-107 1 pl., 3 figs.
- 20.—**Campbell, K. S. W.** The Fauna of the Permo-Carboniferous Ingelara Beds of Queensland. *Pap. Univ. Queensland Dept. Geol.* **4** 3 1953: 1-43 pls. 1-6.
- 21.—**Chronic, J.** Invertebrate Paleontology (excepting Fusulinids and Corals) in Newell, N. D., **Chronic, J. & Roberts, T. G.** Upper Paleozoic of Peru II. *Mem. geol. Soc. Amer.* **58** 1953: 43-108 pls. 5-20.
- Cloud, P. E. Jr.** *see* Barnes, V. E.
- 22.—**Colivicchi, M. T.** Brachiopodi giurassici della Somalia e dell'Ogaden. *Mem. Soc. tosc. Sci. nat.* **56A** 1949: 103-110 1 fig.
- 23.—**Collignon, M.** Le Jurassique dans le Nord de Madagascar. *C.R. Séances Acad. Sci. Paris* **236** 25 1953: 2418-2419. (Brachiopods mentioned.)
- 24.—**Colo, G.** Sur la faune de térébratules multiplissées d'un gisement du Lias moyen de la région d'Ifrane (Causse moyenatlasique). *Notes et Mém. serv. géol. Maroc* **117** 1953: 145-171 7 pls.
- 25.—**Cooper, C. A.** Sponges, Brachiopoda, Pelecypoda, and Scaphopoda in Permian Fauna and El Antimonio, Western Sonora, Mexico. *Smithson. Misc. Coll.* **119** 2 1953: 21-80. (Brachiopods pp. 21-77, pls. 4-23.)
- Cowie, J. W.** *see* Adams, P. J.
- 26.—**Crickmay, C. H.** New Spiriferidae from the Devonian of Western Canada. *Imperial Oil Ltd. Calgary* 1953: 1-11 6 pls.
- 27.—**Crickmay, C. H.** *Warrenella*, a new genus of Devonian Brachiopods. *J. Paleont.* **27** 4 1953: 596-600 25 text-figs.
- 28.—**Croft, W. N.** A simplified parallel grinding instrument. *Ann. Mag. Nat. Hist. (12)* **6** 1953: 915-918, 2 text-figs.
- 29.—**Dahmer, G. & Quiring, H.** Oberdevon in der Antiklinale zwischen den Steinkohlenbecken des Rubagon und des Carrion in Ostasturien. *N. Jb. Min. Geol. Paläont.* **11** 1953: 473-479. (Brachiopods described): 475-478.
- 30.—**Dale, N. C.** Geology and mineral resources of the Oriskany Quadrangle (Rome Quadrangle). *Bull. N.Y. St. Mus.* **345** 1953: 1-197 38 figs. (Ordovician, Silurian, Devonian Brachiopods figured as text-figs. and listed.)
- 31.—**Davis, G. H., III.** The contact between the Manlius limestone and the Coeymans limestone in Upper New York State. *Circ. N.Y. St. Mus.* **35** 1953: 1-31. (Brachiopods listed.)

32.—Defretin, S., Durand Delga, M., & Lambert, A. Faunules du Trias supérieur dans le Nord-Constantinois (Algérie). *Bull. Soc. Hist. nat. Afr. N.* **44** 5-6 1953: 185-195 1 pl.

Deleau, P. C. *see* Jongmans, W.-J.

33.—[Dikenshtein, G. H.] (The boundary between Silurian and Devonian in Podolia). *C.R. Acad. Sci. U.R.S.S. n.s.* **90** 6 1953: 1107-1109. [In Russian.] (Brachiopods mentioned.)

Dobrovoly, E. *see* Huddle, J. W.

34.—Donovan, D. T. The Jurassic and Cretaceous Stratigraphy and Palaeontology of Traill ø, East Greenland. *Medd. Grønland* **111** 4 1953: 1-50. (Brachiopods listed.)

35.—Dorn, P. Zur Geologie der Ogliastra (Ostsardinien), insbesondere ihres Jura. *N. Jb. Min. Geol. Paläont. Stuttgart BB.* **84** B.3 1940: 303-329. (Brachiopods listed.)

36.—Drot, J. Description des brachiopodes du Trias et de l'Infra-lias de Nouvelle-Calédonie. *Sciences de la Terre. Ann. Ec. nat. sup. géol. prosp. min. Univ. Nancy* **1** 1-2 1953: 87-104, pl. xxi.

Drot, J. *see* Avias, J.

Duncan, H. *see* Barnes, V. E.

Durand Delga, M. *see* Defretin, S.

37.—Dvořák, J. Stratigraphy and paleontology of the Middle Turonian between Letovice and Opatov (Moravia). *Bull. int. Acad. Prague* **52** 2 1953: 523-542. (Brachiopods listed.)

38.—Elias, M. K. New data on Dinantian-Namurian equivalents in America. *C.R. 3e Congr. Stratigr. Géol. Carbonifère Heerlen* (1951) **1** 1952: 189-201. (Brachiopods listed p. 190.)

39.—Elliott, G. F. The Classification of the Thesidean Brachiopods. *Ann. Mag. Nat. Hist.* (12) **6**: 1953 693-701 pl. xviii.

40.—Elliott, G. F. Brachial development and evolution in Terebratelloid Brachiopods. *Biol. Reviews* **28** 1953: 261-279, 9 text-figs.

41.—Feruglio, E. Alcune nuove forme di Brachiopodi e Molluschi del Terziario e Cretaceo superiore della Patagonia. *Pubbl. Inst. Geol. Univ. Torino* **2** 1953: 115-159, pls. 3, 12, 13, 4 text-figs.

Fischer, A. G. *see* Newell, N.

42.—Fisher, D. W. Additions to the stratigraphy and paleontology of the Lower Clinton in western New York. *Bull. Buffalo Soc. nat. Sci.* **21** 2 1953: 26-36 2 pls. 1 fig. (Brachiopods figd. and listed.)

43.—Fisher, D. W. & Rickard, L. V. Age of the Brayman shale. *Circ. N.Y. St. Mus.* **36** 1953: 1-14. (Silurian Brachiopods listed.)

44.—Fleming, C. A. The Geology of Wanganui Subdivision. *Bull. New Zealand Geol. Surv. N.S.* **52** 1953: 1-362. (Brachiopods listed.)

45.—Flower, R. H. Age of Bliss Sandstone, New Mexico. *Bull. Amer. Ass. Petrol. Geol.* **37** 8 1953: 2054-2055. (Brachiopods mentioned.)

46.—Flügel, H. Die stratigraphischen Verhältnisse des Paläozoicums von Graz. *N. Jahrb. Min. Geol. Monatsheft.* **1953** 2: 55-92. (Brachiopods listed.)

47.—Földvári, A. Lead ores and fossiliferous Dinantian (Lower Carboniferous) at Szabadbattyán. *Acta geol. hung.* **1** 1-4 1952: 11-36 text-figs. 1-3 pls. 1-3. (Fossils of Carboniferous strata figured and described pp. 18-19.)

48.—Follet, J. Le Carbonifère inférieur du Sahara central. *C.R. Congr. géol. int. Alger.* **19** 1952 sect. 2 fasc. 2 1953: 11-28. (Brachiopods mentioned.)

49.—Ford, T. D. New Evidence on the correlation of the Lower Carboniferous Reefs at Castleton, North Derbyshire. *Geol. Mag.* **89** 1952: 346-356. (Brachiopods mentioned.)

50.—Freyberg, B. v. Verkieelte Malm-Fossilien in Unterer Kreide. *Geol. Blätt. Nordost-Bayern* **2** 4 1952: 155-156.

51.—George, T. N. The Lower Carboniferous Rocks of north-western Ireland. *Adv. Sci. London* **10** 37 1953: 65-73. (Brachiopods mentioned.) [Summary of papers read

at Brit. Assoc. meeting, Belfast, 1952.]

52.—Geyer, O. F. Die Fauna der oolithischen Trümmerkalke des oberen Malm in Württemberg und ihre Beziehungen zur Korallogenen Fazies des Tithon. N. Jb. Geol. Paläont. Stuttgart 1953 3: 130–140. (Brachiopods listed.)

53.—Gigout, M. Études géologiques sur la Méséta Marocaine Occidentale (arrière-pays de Casablanca, Mazagan et Safi). Trav. Inst. sci. Chérifien No. 3 1951: I. Text 1–508, II Atlas 27 pls. (Brachiopods figured pls. 2, 4, 5, 6, 7, 8, 9, 13.)

54.—Gigout, M. Résumé de nos connaissances sur le Primaire de la Méséta marocaine occidentale. C.R. Cong. géol. int. Alger 19 1952 sect. 2, fasc. 2 1953: 29–40. (Brachiopods mentioned.)

55.—Gilbert, J. L. The Upper Lias near Stibbington Hall, N.G.R. 087988. Rep. Huntingdon Fauna Fl. Soc. No. 5 1952 [1953]: 20–21. (Brachiopods listed.)

56.—Gill, E. D. Relationship of the Australasian and North African Lower Devonian faunas. C.R. Congr. géol. int. Alger 19 1952, sect. 2, fasc. 2 1953: 87–92. (Brachiopods mentioned.)

57.—Glinski, A. Die Freilinger Schichten der Rohrer Mulde (Devon, Eifel). Senckenbergiana 34 1–3 1953: 149–162. (Brachiopods listed.)

58.—Görge, J. Neue Invertebrata aus dem norddeutschen Oberoligozän. Paläont. Z. 26 1–2 1952: 1–9, pl. 2.

59.—Gunter, G. Paleocological Import of certain relationships of marine animals to salinity. J. Paleont. 21 1 1947: 77–79.

60.—Gunter, G. Extended Remarks on relationships of marine animals to salinity. J. Paleont. 21 5 1947: 498–500.

61.—Gussow, W. C. Carboniferous Stratigraphy and Structural Geology of New Brunswick, Canada. Bull. Amer. Assoc. Petrol. Geol. 37 1953: 1713–1816. (Brachiopods mentioned.)

62.—Hagn, H. A new Method of preparing oriented thin sections of Foraminifera and other small Paleontologic specimens. Micropaleontologist 7 1 1953: 34–38 fig. 9.

63.—Harker, P. A new Edriasteroid from the Carboniferous of Alberta. J. Paleont. 27 2 1953: 288–295. (Brachiopods listed.)

64.—Hassan, M. Y. Tertiary Faunas from Kap Brewster, East Greenland. Medd. Grønland 111 5 1953: 1–42, 5 pls. 1 text-fig. [Also Comm. paléont. Mus. Min. Geol. Univ. Copenhagen 82 1953.]

65.—Havlíček, V. On the Ordovician Representatives of the Family Plectambonitidae (Brachiopoda) Sborn. serv. géol. Tchecoslovaq. 19 1952: 397–428, pls. 13–15. (Summary in Russian: 416–422. (Summary in English: 423–428.))

66.—Haysaka, I. On the geological age of the Brachiopod Beds in the Vicinity of Nabeyama. Totigi Prefecture. J. Geol. Soc. Japan 51 608 1944: 154–156. [In Japanese.]

67.—Hayasaka, I. *Hamletella*, a new Permian genus of Brachiopoda, and a new species from the Kitakami Mountains, Japan. Trans. Proc. Palaeont. Soc. Japan N.S. 12 1953: 89–95, pl. 9.

68.—Hayasaka, I. & Hayasaka, S. Fossil Assemblages of Molluscs and Brachiopods of unusually large sizes from the Permian of Japan. Trans. Proc. Palaeont. Soc. Japan N.S. 10 1953: 37–44, pl. v.

69.—Hayasaka, I. & Uozumi, S. On some recent and fossil Brachiopods from Hokkaido. J. Fac. Sci. Hokkaido Univ. (4) Geol. & Min. 8 2 1952: 86–96.

Hayasaka, S. *see* Hayasaka, I.

70.—Henbest, L. G. Morrow group and Lower Atoka formation of Arkansas. Bull. Amer. Assoc. Petrol. Geol. 38 8 1953: 1935–1953. (Brachiopods mentioned.)

71.—Henningsmoen, G. Early Middle Cambrian Fauna from Rogaland S.W. Norway. Norsk. geol. Tidsskr. 30 1952: 13–31 pl. ii.

72.—Henriques da Silva, G. Fauna fossil de Inhaminga. Mem. Not. Mus. Min. Geol. Univ. Coimbra 34 1953 : 1-12 pl. i.

73.—Hessland, I. Investigations of the Senonian Kristianstad District, S. Sweden. II. Sedimentology and lithogenesis of the Åhus Series. Bull. Geol. Inst. Univ. Upsala 34 1949-53 : 45-106. (Brachiopods p. 68.)

74.—Heylman, E. B. Carboniferous fossils from wells in Paradox Basin, Utah. Bull. Amer. Assoc. Petrol. Geol. 37 9 1953 : 2188-2191. (Brachiopods listed.)

Hickox, J. E. *see* Newell, N.

75.—Hignett, E. M. Field meeting at Welshpool. Proc. Geol. Assoc. Lond. 64 2 1953 : 100-104.

76.—Holland, F. D. Jr. Mississippian Stratigraphy in northeastern Utah and southwestern Montana, Compass Sigma Gamma Epsilon 28 1951 : 124-131. (Brachiopods listed.)

77.—Holland, F. D. Jr. Stratigraphic Details of Lower Mississippian Rocks of northeastern Utah and southwestern Montana. Bull. Amer. Assoc. Petrol. Geol. 36 9 1952 : 1697-1734. (Brachiopods listed.)

78.—Holtedahl, O. Norges Geologi. Kambro-siluriske suprakrustale dannelser. Norg. geol. Unders. 164 1 1953 : 178-232, text-figs. 69-70, 74, 78, 81, 91.

79.—Huddle, J. W. & Dobrovolny, E. Devonian and Mississippian rocks of central Arizona. Prof. Pap. U.S. geol. Surv. 233/D 1952 : 65-112. (Brachiopods mentioned.)

80.—Hyde, J. E. Mississippian Formations of Central and Southern Ohio. Bull. Ohio Geol. Surv. 51 1953 : 1-355. (Brachiopods pp. 217-289, pls. 4-37.)

81.—[Ilina, N. S.] [New data on the stratigraphy of the lower Carboniferous in the deposits of the southern part of Sursk-Mokshinko uplift.] C.R. Acad. Sci. U.R.S.S. n.s. 91 5 1953 : 1191-1194. [In Russian.] (Brachiopods mentioned.)

82.—Ivanova, E. A. Sur le rôle fonctionnel de l'appareil apical des Spiriferidae. Izv. Akad. Nauk. SSSR. Biol. 1943 5 : 265. (Recorded Z.R. 1945). [Transl. in French by Centre Et. Doc. Paléont.] Paris no. 390.]

83.—Jaekel, S. Zur Biologie der Actinie *Amphianthus radiatus* Carlgren und des Brachiopoden *Pelagodiscus atlanticus* King. Zool. Anz. 150 1-2 1953 : 38-40, 1 text-fig.

84.—Jongmans, W. J. & Deleau, P. C. Les Bassins houillers du sud-Oranais II. Bull. Serv. Carte géol. Algérie (1) 13 1951 : 1-48. (Brachiopods p. 45, pl. iii.)

85.—Jordana, D. L. & Kindelán, J. A. Explicación de la Hoja no. 461 Sigüenza (Guadalajara y Soria). Map. geol. Esp. Ist. geol. min. Esp. 66 H 1951 : 1-66. (Brachiopods listed p. 43, 44 and fig. 31.)

86.—Kalapesi, A. S. & Bana, H. R. Stratigraphical and paleontological features of the formations occurring in Zewan and Risin spurs of Kashmir. Proc. Indian Sci. Congr. 40 3 1953 : 21-22. (Brachiopods listed.)

87.—Kay, M. Geology of the Utica Quadrangle, New York. Bull. N.Y. St. Mus. 347 1953 : 1-126 66 figs. (Brachiopods figured fig. 66 and listed.)

88.—Kegel, W. Das Paläozoikum der Lindener Mark bei Giessen. Abh. hess. Landesamt. Bodenforsch. 7 1953 : 1-55. (Brachiopods listed and described.)

89.—Khvorova, I. V. History of the development of the Middle and Upper Carboniferous seas of the western parts of the Moscow syncline. Trans. Inst. Paléozool. Acad. Sci. U.R.S.S. 43 2 1943 : 1-216. (Brachiopods figured pls. 11, 19, 32, 38, 40, 41, 42.)

Kindelán, J. A. *see* Jordana, D. L.

90.—Kirk, E. & Amsden, T. W. Upper Silurian Brachiopods from southeastern Alaska. Descriptions and illustrations of a fauna from the Islands of Kosciusko and Heceta. Geol. Surv. Prof. Pap. Washington 233c 1952 : 53-66 pls. vii-x.

- 91.—[Koroleva, M.] ["Transition layers from Ordovician to Gotlandian in Northern Kazakhstan]. C.R. Acad. Sci. U.R.S.S. n.s. **88** 6 1953: 1043-1044. [In Russian.] (Brachiopods mentioned.)
- 92.—Kovalevskii, V. O. On the junction of the Jurassic and Cretaceous formations. Sovr. Nauc. Trud. Moscow Colld. sci. works **1** 1950: 159-215. (Upper Jurassic Brachiopods listed p. 215.)
- 93.—[Krasnyi, L. I.] [On the discovery of Devonian faunas in the Shantar Islands.] C.R. Acad. Sci. U.R.S.S. n.s. **93** 2 1953: 333-334. [In Russian.] (Brachiopods mentioned.)
- 94.—Krömmelbein, K. Der Horizont mit *Spirifer ostiolatus* in der Schichtfolge der Prümer Mulde (Devon, Eifel). Senckenbergiana **34** 1-3 1953: 61-72. (Brachiopods mentioned.)
- 95.—Kummel, B. Middle Triassic Ammonites from Peary Land. Comm. paléont. Mus. min. geol. Univ. Copenhagen **84** 1953: 1-21. (Brachiopods mentioned). (Reprinted from Medd. Grøn. **127** no. 1.)
- 96.—Kupfahl, H.-G. Untersuchungen in Gotlandium und Unterdevon des Kellerwaldes und bei Marburg. Notizbl. hess. Landesamt. Bodenforsch. **81** 1953: 96-128. (Brachiopods mentioned.)
- Lambert, A. see Defretin, S.
- 97.—Lamont, A. Records of Irish Trilobites and Brachiopods. Geol. Mag. **90** 6 1953: 433-436.
- 98.—Lanterno, E. Etude géologique des environs de Champéry, Val d'Illiez, Valais, Suisse. Arch. Sci., Genève **6** 6 1953: 295-373. (Brachiopods mentioned.)
- 99.—Licharew, B. K. Sur la variabilité de la structure interne de la valve ventrale chez le *Spirifer* (*Licharewia*) *rugulatus* Kutorga. Izv. Akad. Nauk. SSSR., Biol. **1/2** 1942: 71. (Recorded Z.R. 1944.) [Transl. in French by Centre Et. Doc. Paléont. Paris no. 348.]
- 100.—Licharew, B. K. Au sujet du nouveau *Spirifer* permien se rapprochant de *Sp. striatus* Sow. Izv. Akad. Nauk. SSSR. Biol. 1943 no. 5: 279. (Recorded Z.R. 1945.) [Trans. in French by Centre Et. Doc. Paléont. Paris no. 391.]
- 101.—[Liepin, P. P.] [The lower Devonian beds of the western part of the Main outcrop]. Latv. P. S.R. Zinat. Akad. Vestis **11** 64 1952: 113-116. [In Russian.] (Brachiopods mentioned.)
- 102.—Lillie, A. R. The geology of the Dannevirke Subdivision. Bull. New Zealand Geol. Surv. N.S. **46** 1953: 1-156. (Brachiopods listed.)
- 103.—Lindström, M. On the Lower Chasmops Beds in the Fågelsång District (Scania). Geol. Fören. Stockholm Förhand. **75** 2 473 1953: 125-148 pl. i.
- Linsley, E. G. see Mayr, E.
- 104.—Llopis Lladó, N. Sobre el área de dispersión de *Daonella* cf. *lommelli* v. Mojs., en el NE. de España. Mem. Comun. Inst. geol. Barcelona **9** 1952: 39-47. (Brachiopods mentioned.)
- 105.—[Lyashenko, A. I.] Rud-kinok Deposits. C.R. Acad. Sci. U.R.S.S. n.s. **89** 5 1953: 921-923. [In Russian.] (Brachiopods mentioned.)
- 106.—[Lyashenko, A. I.] [Mosolov horizon]. C.R. Acad. Sci. U.R.S.S. n.s. **91** 1 1953: 149-152. [In Russian.] (Brachiopods mentioned.)
- 107.—[Lyashenko, A. I.] [Voro-byev horizon]. C.R. Acad. Sci. U.R.S.S. n.s. **92** 1 1953: 139-142. [In Russian.] (Brachiopods mentioned.)
- 108.—Maack, R. Vestígios pré-Devonianos de glaciação e a sequência de camadas Devonianas no Estado do Paraná. Arq. Biol. Tech. Curitiba **5-6** 1950-51 [1953]: 197-230. (Brachiopods listed.)
- 109.—McKerrow, W. S. Variation in the Terebratulacea of the Fuller's Earth Rock. Quart. J. Geol. Soc. **109** 1953: 97-124 16 figs.

110.—Maksimović, B. V., & Marković, B. Nouvelle contribution à la connaissance de l'Albien et du Cénomaniien de la Serbie. Faune de l'Albien et du Cénomaniien des environs de Kadina Luka et de Rajac (Serbie occidentale). Recueil trav. Acad. Serb. Sci. **33** Inst. geol. no. **5** 183–208, in Czech, 208–210 French summary, pl. i.

111.—Marek, L. Contribution to the stratigraphy and fauna of the uppermost part of the Králův Dvůr Shales (Ashgillian). Sborn. serv. géol. Tchecoslov. **19** 1952: 429–440 in Czech, 441–448 in Russian, 449–455 in English.

112.—Marković - Stefanović, O. Nouvelle contribution à la connaissance de la situation stratigraphique des couches crétacées aux environs du village Klenje près de Beograd. et leur faune. Recueil trav. Acad. serb. Sci. **23** Geol. Inst. **4** 1952: 193–203 in Czech, 203–205 French summary, pl. 5.

Marković, B. see Maksimović, B. V.

113.—Marwick, J. Divisions and Faunas of the Hokonui System (Triassic and Jurassic). Paleont. Bull. Geol. Surv. N.Z. **21** 1953: 1–141 and maps. (Brachiopoda pp. 32–46, 84–86, pls. i, ii, xv.)

114.—Marwick, J. Faunal migrations in New Zealand seas during the Triassic and Jurassic. N.Z. J. Sci. Tech. **34B** 5 1953: 317–321. (Brachiopods mentioned.)

115.—Maxwell, W. G. H. Upper Palaeozoic Formations in the Mt. Morgan district, Stratigraphy and Structure. Publ. Univ. Queensland Dept. Geol. **4** 4 1953: 1–14. (Brachiopods listed.)

116.—Mayr, E., Linsley, E. G. & Usinger, R. L. Methods and Principles of Systematic Zoology. 1953: 1–328 45 figs. (Brachiopods as Phylum in classification p. 55).

117.—Melendez, B. El Devonico en Espana. C.R. Cong. géol. int. Alger **19** (1952) sect. 2 fasc. 2 1953: 131–140. (Brachiopods mentioned.)

Menyailenko, P. A. see Semikhatova, S. V.

118.—Mésigos, M. G. El paleozoico superior de Barreal y su continuación austral "Sierra de Barreal" (provincia de San Juan). Rev. Asoc. geol. argent. **8** 2 1953: 65–109.

119.—Minato, M. Palaeogeographie des Karbons in Ostasien. Proc. Japan Acad. **29** 6 1953: 246–253. (Brachiopods mentioned.)

120.—Minato, M. & others. Biostratigraphie des Karbons im Kitakami-Gebirge, Nordöstliches Honshu, Japan. J. geol. Soc. Japan **59** 695 1953: 385–399. (In Japanese with German abstract). (Brachiopods listed.)

121.—Minato, M. On some reticulate Spiriferidae. Trans. Proc. Palaeont. Soc. Japan n.s. **11** 1953: 65–73, 3 text-figs.

122.—Montanaro Gallitelli, E. Corallari e Problematici del Permiano del Sosio (Sicilia). C.R. Cong. géol. int. Alger **19** (1952) sect. 2, fasc. 2 1953: 149–163. (Brachiopoda p. 160).

123.—Mouterde, R. Faune à affinités italiennes et marocaines dans le Lias moyen Portugais. C.R. Acad. Sci. Paris **236** 20 1953: 1980–1982. (Brachiopods mentioned.)

124.—Mouterde, R. Etudes sur le Lias et le Bajocien des bordures Nord et Nord-est du Massif Central Français. Bull. Carte géol. Fr. **50** 236 1953: 63–521 (1–459). (Brachiopods listed.)

125.—Mouterde, R. Ammonites à affinités italiennes et marocaines dans le Domérien supérieur portugais. Bol. Soc. geol. Portugal **10** 1952: 127–132. (Brachiopods listed.)

126.—Muir-Wood, H. M. On some Jurassic and Cretaceous Brachiopoda from Traill Ø, East Greenland. Medd. Grønland. **111**, 6 1953: 1–15, 1 pl.

127.—Muir-Wood, H. M. [Report on Brachiopoda from Gibraltar] in Bailey, E. B. Notes on Gibraltar and the Northern Rif. Quart. J. Geol. Soc. **108** 1953: 164–165.

128.—Muir-Wood, H. M. Techniques employed in grinding and illustrating serial transverse sections of fossil Brachiopods. Ann. Mag. Nat. Hist. (12) **6** 1953: 919–922 1 diagram.

- 129.—Muir-Wood, H. M. & Owen, E. F. The use of Acetic Acid on Fossils. *Museums J.* **53** 1953 (April): p. 21. (Review of article in *Proc. Geol. Assoc.* **63**, 4, 1952).
- Nagarova, K. A. *see* Semikhatova, S. V.
- 130.—Newell, N., Rigby, J. K., Fischer, A. G., Whiteman, A. J., Hickox, J. E. & Bradley, J. S. The Permian Reef complex of the Guadalupe Mountains region, Texas and New Mexico. A study in Paleogeology, San Francisco 1953: 1-236, pls. 21, 27, 31, 32 and text-figs. (listed p. 228, 229).
- 131.—Nonaka, J. On some Permian (?) Brachiopods from the vicinity of Itukaiti in the Kwantow Mountainland. *J. Geol. Soc. Jap.* **51** 609 1944 pp. 188-191 3 text-figs.
- 132.—Nonaka, J. On the Occurrence of Permian Marine shells in the Hsinglung Coal-field in Jehol. *J. Geol. Soc. Japan* **51** 609 1944: 192-195 fig. 4.
- Northrop, S. A. *see* Bass, N. W.
- 133.—Öpik, A. A. Lower Silurian Fossils from the "Illäenus Band", Heathcote, Victoria. *Mem. geol. Surv. Victoria Australia* **19** 1953: 1-42 pls.
- Owen, E. F. *see* Muir-Wood, H. M.
- 134.—Owen, T. R. The Structure of the Neath Disturbance between Bryniau Gleision and Glynneath, South Wales. *Quart. J. Geol. Soc.* **109** 3 1954: 333-365.
- 135.—Padget, P. The Stratigraphy of Cuileagh, Ireland. *Geol. Mag.* **90** 1 1953: 17-26. (Brachiopods mentioned.)
- 136.—Paproth, E. Eine Kohlenkalkfauna aus dem Kulmkonglomerat von Frankenberg an der Eder. *Paläont. Z. Stuttgart* **27** 3-4 1953: 169-207 pls. 11, 12.
- 137.—Parkinson, D. The Carboniferous Limestone of Treack Cliff, Derbyshire, with Notes on the Structure of the Castleton Reef-Belt. *Proc. Geol. Assoc. Lond.* **64** 4 1953: 251-268. (Brachiopods mentioned.)
- 138.—Pasić, M. Geologische und faunistische Darstellung der Verhältnisse des Čerevički Potok und seiner Quellenarme (Fruška Gora). *Recueil trav. Acad. serb. sci.* **23** geol. Inst. 4 169-190 in Czech, 191-192 German summary, pl. iii.
- 139.—Patil, A. M. Study of the marine fauna of the Karwar coast and the neighbouring islands. IV. Echinodermata and other groups. *J. Bombay nat. Hist. Soc.* **51** 2 1953: 429-434. (Brachiopoda p. 431.)
- 140.—Patton, J. B., Perry, T. G. & Wayne, W. J. Ordovician Stratigraphy and the Physiography of part of southeastern India. *Indiana geol. Surv. Field Conf. book* **6** 1953: 1-29. (Brachiopods listed.)
- 141.—Percival, E. Orientation of Telotremaus Brachiopoda. *Nature* **171** 4349 1953 (March 3rd): 436.
- Perry, T. G. *see* Patton, J. B.
- 142.—Picard, L. Silurian in the Negev. (Israel). *Bull. Res. Council Israel* **2** 3 1952: 246-248.
- 143.—Picard, L. Silurian in the Negeb (Israel). *C.R. Cong. géol. int. Alger* **19** (1952) sect. 2, fasc. 2 1953: 179-183. (Brachiopods mentioned.)
- 144.—Pillet, J. Sur un niveau grauwackeux dans le Dévonien de Sablé. *C.R. Soc. géol. Fr.* **9** 1952: 151-152. (Brachiopods listed.)
- 145.—Pray, L. C. Upper Ordovician and Silurian stratigraphy of Sacramento mountains, Otero county, New Mexico. *Bull. Amer. Ass. Petrol. Geol.* **37** 8 1953: 1894-1918. (Brachiopods listed.)
- 146.—Prescher, H. Die Fossilien der Oberkreide in der Bohrung Dresden 1951. *Geologie Berlin* **2** 4 1953: 253-262. (Brachiopods mentioned p. 257, 260).
- 147.—[Pronin, A. A.]. [Age of coal-bearing layer Ch₁ on eastern slope of the Middle Urals]. *C.R. Acad. Sci. U.R.S.S. n.s.* **85** 4 1952: 879-881. [In Russian]. (Brachiopods mentioned.)

148.—[Pronin, A. A.] [Tournaisian deposit on Eastern slope of Middle Ural.] C.R. Acad. Sci. U.R.S.S. n.s. 85 5 1952 : 1139-1141. [In Russian.] (Brachiopods mentioned.)

149.—[Pronin, A. A.] [Namurian deposits of the western slope of the Middle Ural.] C.R. Acad. Sci. U.R.S.S. n.s. 90 6 1953 : 1123-1125. [In Russian.] (Brachiopods mentioned.)

Prouty, C. E. *see* Bolger, R. C.

150.—Put, K. Ostravskokarovinsky kamenonhelný revír ne světle theorie cyklické sedimentace. Sborn. přír. Společ. Mor. Ostravé 13 3-4 1952 : 335-354 figs. (Brachiopods mentioned.)

Quiring, H. *see* Dahmer, G.

151.—Rayner, D. H. The Lower Carboniferous Rocks in the North of England : A Review. Proc. Yorks. Geol. Soc. 28 4 1953 : 231-315. (Brachiopods mentioned.)

Rickard, L. V. *see* Fisher, D. W.

Rigby, J. K. *see* Newell, N.

152.—Ronchetti, C. R. & Brenna, C. Studi paleontologici sul Lias del Monte Albenza (Bergamo), Brachiopodi dell'Hettangiano. Riv. ital. Pal. Strat. Milano 59 3 1953 : 111-134 2 pls.

153.—Rösler, A. Die Fauna aus den "Bornicher Schichten" (Unter-Devon) des Gemeinde-Steinbruches von Holzhausen a.d. Haide (Blatt Katzenelnbogen Taunus). Notizbl. he-s. Landesamt. Bodenforsch. 81 1953 : 138-153 2 pls.

Rostovtzeva, L. F. *see* Semikhatova, S. V.

154.—Ruggieri, G. Eta e faune di un terrazzo marino sulla costa ionica della Calabria. Giorn. Geol. Bologna (ser 2a) 23 1953 : 19-168. (Brachiopods listed.)

155.—Sauer, K. Beiträge zur Stratigraphie von Callovien und Oxfordien am Südwestfuss und auf der Sudostabdachung des Schwarzwaldes. Jber Mitt. Oberrh. Geol. Ver. 34 1953 : 52-73. (Brachiopods mentioned.)

156.—Savinov, S. I. Evolution des *Choristites* des mers carbonifères de la région de Saratov. Dokl. Akad. Nauk. SSR. 77 5 p. 889. (Recorded Z.R. 1951). [Transl. in French by Centre Et. Doc. Paléont. Paris, no. 320.]

157.—Scanlon, J. E. The Carboniferous rocks near Garristown, Co., Dublin, and in the adjacent part of Co. Meath. Sci. Proc. R. Dublin Soc. N.S. 26 (8) 1953 : 145-156. (Brachiopods listed.)

158.—Schaub, H. Variations-statistische Untersuchungen an Linguliden aus einem *Lingula*-Horizont des Niederrheinischen Steinkohlengebietes. N. Jb. Geol. Paläont. Stuttgart 11 1953 483-497, 11 text-figs.

159.—Schmidt, H. *Rensselandia* oder *Newberria*? Senckenbergiana 34 1-3 1953 : 174.

160.—Semichatova, S. V. Quelques Spiriferidae du Carbonifère inférieur. Izv. Akad. Nauk. SSSR. Biol. 1942 1-2 : 79. (Recorded Z.R. 1944). [Transl. in French by Centre Et. Doc. Paléont. Paris no. 359.]

161.—[Semichatova, S. V. & Menyailenko, P. A.] [Deposits of Bashkirian beds of the Middle Carboniferous in the Southern part of Don-Medveditz uplift.] C.R. Acad. Sci. U.R.S.S. n.s. 88 (3) 1953 : 539-541. [In Russian.] (Brachiopods mentioned.)

162.—[Semichatova, S. V., Nazarova, V. A., & Rostovtzeva, L. F.] [Tournaisian and the lower part of the Viséan strata of the river Orel in the Dnieper-Donetz basin]. C.R. Acad. Sci. U.R.S.S. n.s. 92 1 1953 : 147-150. [In Russian.]

163.—Shaw, A. B. Paleontology of northwestern Vermont III. Miscellaneous Cambrian Fossils. J. Paleont. 27 1 1953 : 137-146 pl. xviii.

164.—Shikama, T. A handbook of illustrated fossils from Japanese and their adjacent Territories. Kyōto 1952. [In Japanese.] (Brachiopoda 221-5 and figured on pls. 1, 2, 3, 6, 7, 8, 12, 15, 19, 38, 53, 55, text-figs. 25-27.)

- 165.—Shrock, R. R. & Twenhofel, W. H.** Principles of Invertebrate Paleontology. (Revised edit. of Twenhofel and Shrock Invertebrate Paleontology.) 2nd edit. 1953: 1-816, text-figs. (Phylum Brachiopoda pp. 260-349, 60 figs.)
- 166.—Siegfried, P.** Die Heersumer Schichten im Hildesheimer Jura-Zug. Geol. Jahrb. **67** 1953: 273-359. (Brachiopods p. 330, 332.)
- 167.—Sikošek, B.** Stratigraphie und Tektonik des Gebietes zwischen Mali Izvor—Minicévo—Kadibogaz in Ostserbien. Recueil trav. Acad. Serb. Sci. **23**, Geol. Inst. 4 1952: 146-165 in Czech, 166-167 German summary, pl. iii, 2 maps.
- 168.—Simpson, I. M.** *Daviesiella destinezi* (Vaughan), a Lower Carboniferous Index Fossil in North-west Ireland. Geol. Mag. **90** 1953: 193-200 pl. ix, 3 text-figs.
- 169.—Sinclair, G. W.** Middle Ordovician Beds in the Saguenay Valley, Quebec. Amer. J. Sci. **251** 1953: 841-854.
- 170.—Sinclair, G. W.** Notes on forensic Paleontology. J. Paleont. **27** 4 1953: 608-609.
- 171.—Skjeseth, S.** On the Lower Didymograptus zone (3B) at Ringsaker, and contemporaneous Deposits in Scandinavia. Norsk. Geol. Tidsskr. **30** 1952: 138-182. (Brachiopods listed.)
- 172.—[Smekhov, E. M.] [Sari Su dislocations.]** C.R. Acad. Sci. U.R.S.S. n.s. **92** 6 1953: 1209-1211. [In Russian.] (Brachiopods mentioned.)
- 173.—[Smirnov, G. A. and Smirnova, T. A.] [Age of granite intrusion of Ural.]** C.R. Acad. Sci. U.R.S.S. n.s. **90** 6 1953: 1139-1141. [In Russian.] (Brachiopods mentioned.)
- Smirnova, T. A.** see Smirnov, G. A.
- 174.—Sokolskaja, A. N.** [Evolution of the genus *Productella* Hall and related forms in the Palaeozoic of the Moscow region.] Trans. Paleont. Inst. Acad. Sci. U.R.S.S. Moscow **14** 3 1948: 1-168, 10 pls. (In Russian.)
- 175.—Solle, G.** Die Spiriferen der Gruppe *arduennensis-intermedius* im rheinischen Devon. Abh. hess. Landesamt. Bodenforsch. **5** 1953: 1-156 18 pls. 45 text-figs.
- 176.—Spreng, A. C.** Mississippian Cyclic Sedimentation, Sunwapta Pass Area, Alberta, Canada. Bull. Amer. Assoc. Petrol. Geol. **37** 4 1953: 665-689. (Brachiopods listed.)
- 177.—Stchépinsky, V.** Le Bathonien moyen d'Arc-en-Barrois (Haute-Marne). C.R. Somm. Séan. Soc. Geol. Fr. **1953** 3 (2 Fév.): 50-52. (Brachiopods mentioned.)
- Steineke, M.** see Bramkamp, R. A.
- 178.—Straaten, L. M. J. U. Van.** Sedimentology of Recent Tidal Flat deposits and the Psammmites du Condroz (Devonian). Geol. en Mijnbouw (N.S.) **16** no. 1, 1954: 25-47. (Brachiopods mentioned.)
- 179.—Straw, S. H.** The Silurian Succession at Cwm Graig Ddu (Breconshire). Liverpool and Manchester. Geol. J. **12** 1953: 208-219. (Brachiopods listed and distribution discussed.)
- 180.—Sugiyama, T.** New Find of *Atrypa* from Japan. J. Geol. Soc. Japan **49** 1942: 73-75, fig. 1. (In Japanese, Résumé in English p. 75.)
- 181.—Sylvester-Bradley, P. C.** A stratigraphical guide to the fossil localities of the Scarborough district. Scarborough Field Nat. Soc. Natural History Scarborough District **1**: 1953 19-48. (Brachiopods listed.)
- 182.—Tachibana, K.** On the occurrence of *Productus nummularis* (Winchell) from the late Upper Devonian of Japan. Sci. Rep. Tokyo Bunrika Daig. **20** 14 1953: 212-216 1 pl., 1 fig.
- 183.—Tasch, P.** Causes and paleoecological significance of dwarfed fossil marine invertebrates. J. Paleont. **27** 3 1953: 356-444. (Brachiopods mentioned.)
- 184.—Teixeira, C.** La Faune Cambrienne de Vila Boim au Portugal. Bol. Soc. Geol. Portugal. **10** 1952: 169-188, pl. xvi-xviii.
- Twenhofel, W. H.** see Shrock, R. R.
- Usinger, R. L.** see Mayr, E.

185.—Veselinović, D. Die Ergebnisse der geologischen Untersuchungen im Gebiet von Vratarnica und M. Izvor in Ostserbien. *Recueil trav. Acad. Serb. Sci.* **23** geol. inst. 4 1952 : 121-140, 143 in Czech, 140-142 in German, pls. i-ii geol. map.

186.—Vigneaux, M. & Buge E. Brachiopodes in Lecointre, G. Recherches sur le Neogène et le Quaternaire marins de la côte Atlantique du Maroc. *Notes et Mém. Serv. Géol. Maroc* **99** 2 Paléontologie 1952 : 24.

187.—[Vyalov, O. S.] [Permian Sea in Djungaria]. *C.R. Acad. Sci. U.R.S.S. n.s.* **85** 2 1952 : 401-404. [In Russian.] (Brachiopods listed.)

188.—[Vyalov, O. S.] [Crossection of Eastern Djungaria]. *C.R. Acad. Sci. U.R.S.S. n.s.* **85** 3 1952 : 623-626. [In Russian.] (Brachiopods mentioned.)

189.—Waern, B. Paleontology and Stratigraphy of the Cambrian and Lowermost Ordovician of the Bödåhamn Core. *Bull. Geol. Inst. Univ. Upsala* **34** 1949-53 : 224-250 pl. i.

190.—Walter, Jr. J. C. Paleontology of Rustler formation, Culberson County, Texas. *J. Paleont.* **27** 5 1953 : 679-702, pls. 70-73, figs. 1-3.

Wayne, W. J. *see* Patton, J. B.

Whiteman, A. J. *see* Newell, N.

191.—Whittard, W. F. The Enigma of the earliest Fossils. *Proc. Bristol Nat. Soc.* **28** 4 1953 : 289-304. (Brachiopods mentioned.)

192.—Whittard, W. F. & others. Report of Summer Field Meeting in South Shropshire 1952. *Proc. Geol. Assoc.* **64** 3 1953 : 232-250. Brachiopods mentioned.)

193.—Williams, A. The geology of the Llandeilo district, Carmarthenshire. *Quart. J. Geol. Soc.* **108** 1953 : 177-208. (Brachiopods listed.)

194.—Williams, A. The classification of the Strophomenoid brachiopods. *J. Wash. Acad. Sci.* **43** 1 1953 : 1-13, 13 figs.

195.—Williams, A. North American and European Stropheodontids: their Morphology and Systematics. *Mem. Geol. Soc. Amer.* **56** 1953 : 1-67, 13 pls.

196.—Williams, A. The morphology and classification of the Oldhaminid brachiopods. *J. Wash. Acad. Sci.* **43** 9 1953 : 279-287 3 pls.

197.—Wind, J. Kridtaflejringer i Jylland. *Flora og Fauna* **59** 4-5 1953 : 73-84. (Brachiopod synonyms listed.)

198.—Wright, J. A. Brachiopod communities in Avonian reef limestones of the Pennines. *Summ. Theses Univ. Glasgow* **1951-52** 1952 : 47-48.

199.—Zak, H. Fauna kulmowa z Jabłowa na Dolnym Śląsku (The Culm fauna from Jablow in Lower Silesia). *Bull. Inst. géol. Warsaw* **72** 1953 : 1-37 Polish, 39-42 Russian, 43-46 English abstract, pls. ii, iii.

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NOTE.—Classification at present under review but mainly according to C. Schuchert and C. M. Le Vene in Fossilium Catalogus 1 42 Brachiopoda 1929, and as emended by various authors.

Full references are given only in the case of new genera and species. In other cases the numeral in "Large bold Clarendon" refers to the list of titles where the full reference will be found. In the case where a reference is given in the Systematic Part the volume number is printed in "Small bold Clarendon".

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†*Lingulella lepis* figd. p. 189 Ordovician Norway, HOLTEDAHL 78; *L.* sp. figd. p. 19, HENNINGSMOEN 71; *L. ferruginea* p. 230, WAERN 189; *L. delgadoi* p. 181 figd., TEIXEIRA 184; *L. chinensis* figd. pl. 2, SHIKAMA 164; *L. stonei* sp. nov. *cooperi* nom. nov. for *L. vermontensis* Ulrich & Cooper 1938 (non Howell) p. 141, Cambrian Vermont, U.S.A., SHAW J. Paleont. 27 1 1953.

†*Obolus* (*Westonia*) *blackwelderi* figd. pl. 2, SHIKAMA 164.

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†*Acrotreta socialis* p. 21, HENNINGSMOEN 71; *A. seebachi* figd. p. 189 Ordovician Norway, HOLTEDAHL 78; *A. coreanica* figd. pl. 2, SHIKAMA 164; *A.* spp. p. 230, *conula* figd., cf. *oelandica* p. 235, WAERN 189.

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†*Proschizophoria personata* p. 316 figd., GIGOUT 53.

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†*Orthis* (*Dalmanella*) sp. p. 176, PAPROTH 136.

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†*Enteleles gibbosus* p. 92 figd., CHRONIC 21; *E. acuteplicatus* figd. pl. 8, SHIKAMA 164.

†*Isorthis* sp. KIRK & AMSDEN 90 p. 55.

†*Orthotich*[*i*] *a japonica* figured pl. 5, HAYASAKA & HAYASAKA 68; *O. japonica* figd. pl. 8, SHIKAMA 164.

†*Schizophoria* cf. *antiqua* p. 146 figd., RÖSLER 153; *S. resupinata* p. 15 figd., ZAK 199; *S. striatula* p. 475, DAHMER & QUIRING 29; *S. provulvaria* p. 316 figd., GIGOUT 53; *Orthis* (*S.*) *resupinata* fig. p. 176, PAPROTH 136.

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†*Glyptotrophia spinosa* sp. nov. Cambrian Vermont, SHAW J. Paleont. 77 1 1953 p. 143, figd. on plate xviii, and serial sections.

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PENTAMERIDAE

†*Aliconchidium yassi* internal structure of pedicle valve figd. p. 139, AMSDEN 3.

†*Antirhynchonella* Oehlert 1887, non Quenstedt 1871 (syn. *Barrandella* Hall & Clarke 1893) type species *Atrypa linguifera* Sowerby 1839, p. 141, AMSDEN 3.

†*Clorinda undata* internal structure pedicle valve p. 139, AMSDEN 3.

†*Conchidium alaskense* sp. nov. p. 55 figd., Upper Silurian Alaska, KIRK & AMSDEN Geol. Surv. Wash. Prof. Pap. 233 c 1952.

†*Gypidula lata* Alexander 1936 not figured, and *bravonium* Alexander 1948 figured, synonyms. Ruling of Int. Comm. Zool. Nomen. awaited whether Int. Geol. Congress (Bologna 1881) ruling that new species invalid unless description accompanied by illustration is to be binding, ALEXANDER 2 p. xxxvi; *G. typicalis* nom. nov. for *Pentamerus occidentalis* Hall 1858, non Hall 1852, p. 140. *coeymanensis prognostica* longitudinal and transverse sections, fig. 1, *brevirostris* longitudinal section fig. 2, AMSDEN 3; *G. ?* sp. p. 57, KIRK & AMSDEN 90.

†*Holorhynchus giganteus* figd. p. 203 Silurian Norway, HOLTEDAHL 78.

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†*Pentamerella areyi* figd. p. 143, ? *P. sublinguifer* fig. 2 p. 139, AMSDEN 3.

†*Pentameroides subrectus* longitudinal and transverse sections fig. 1 p. 138. AMSDEN 3.

†Pentameroidinae subfam. nov. p. 144 with genus *Pentameroides*, figd. and provisionally *Pentamerifera*, and *Conchidiella*, AMSDEN J. Wash. Acad. Sci. 43 5 1953.

†*Pentamerus* cf. *P. oblongus* longitudinal and transverse sections p. 138, *borealis* internal structure, ? cf. *P. gotlandicus* fig. 3 p. 139, AMSDEN 3; *P. laevis* (= *oblongus*) figd. p. 29 pl. 11, FISHER 42; *P. multiplicatus*, cf. *biplicatus* p. 334 figd., GIGOUT 53; *P. borealis*, *laevis* figd. p. 203 Silurian Norway, HOLTEDAHL 78.

†*Platymerella manniensis* Foerste 1909, non 1920, figd. p. 142, AMSDEN 3.

†*Sieberella roemeri* transverse and longitudinal sections p. 139, AMSDEN 3; *S. n.* sp. aff. *heberti* p. 150 figd., RÖSLER 153.

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†*Costistricklandia* gen. nov. p. 143 type species *gaspéensis* figd. p. 143, AMSDEN 3.

†*Stricklandia lens* figd. p. 203 Silurian Norway, HOLTEDAHL 78.

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PLECTAMBONITIDAE

†*Ingria* interior of brachial and pedicle valves figured p. 7, WILLIAMS 194.

†*Kozłowskites* gen. nov. type species *Strophomena nuncia* Barrande 1879 p. 406, 418, 425, *nuncius* p. 407, Ordovician Czechoslovakia, HAVLÍČEK Šborn. serv. géol. Tchécoslovaq. 19 1952.

†*Leangella ino* sp. nov. L^f. Silurian Victoria, ÖPIK Mem. geol. Surv. Victoria Australia 19 1953 p. 13 figd.

†Plectambonacea superfam. nov. with families Taffidae, Plectambonitidae, Leptestiidae fam. nov. p. 6, WILLIAMS J. Wash. Acad. Sci. 43 1 1953.

†*Plectambonites transversalis* figd. p. 90, DALE 30.

†Plectambonitidae diagnosed, with subfam. Plectambonitinae, Ahtielinae, WILLIAMS 194 p. 6.

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†*Aegiria* defined p. 399, 417, 424, *aquila aquila* figd. p. 399, *a. praecursor* subsp. nov. p. 401, figd., *descendens* sp. nov. p. 402 figd., *quaesita* p. 403, Ordovician Czechoslovakia, HAVLÍČEK Šborn. serv. géol. Tchécoslovaq. 19 1952; *A. ?* sp. p. 139 recorded Ordovician Scania, LINDSTRÖM 103.

†*Benignites* gen. nov. type species *Strophomena primula* Barrande 1879 p. 409, 410, 419, 426 Ordovician Czechoslovakia, HAVLÍČEK Šborn. serv. géol. Tchécoslovaq. 19 1952.

†*Benignites* (*Leptestiina*) *prantli* sp. nov. p. 412, 427 Ordovician Czechoslovakia, HAVLÍČEK Šborn. serv. géol. Tchécoslovaq. 19 1952.

†*Chonetoides* p. 404, 418, 425, *tenerrima* sp. nov. p. 404 figd., *radiatula* p. 405 figd., Ordovician Czechoslovakia, HAVLÍČEK Sborn. serv. géol. Tchécoslovaq. 19 1952

†*Leptellina* interior of brachial and pedicle valves figured p. 7, WILLIAMS 194.

†*Leptestiidae* fam. nov. p. 6 with subfam. *Leptestiinae*, *Sowerbyellinae* p. 8, WILLIAMS J. Wash. Acad. Sci. 43 1 1953

†*Sericoidea* gen. nov. type species *Leptaena sericea* var. *restrita* Hadding 1913 p. 134, *restrita* p. 135, figd. U† Ordovician Scania, LINDSTRÖM Geol. Fören Stockholm Fördhand. 75 2 473 1953.

†*Sowerbyella transversalis* figd. p. 28 pl. 10, FISHER 42; *S.* interior of brachial and pedicle valves figured p. 7, WILLIAMS 194; *S. austrum* sp. nov. p. 14 figd., L† Silurian Victoria, ÖPK Mem. Geol. Surv. Victoria Australia 19 1953; *S.* gen. discussed, *tristis* p. 408, 419, 426, HAVLÍČEK 65; *S.* sp. figd., p. 195, Ordovician Norway, *transversalis* figd., p. 203, Silurian Norway, HOLTEDAHL 78; *S.* cf. *sericea* recorded Ordovician Scania, LINDSTRÖM 103 p. 134; *S. punctostriata* figd. p. 120 fig. 66, KAY 87; *S. duvalii* p. 30, KEGEL 88.

Sowerbyellinae defined to include new genus *Kozlowskites* p. 399, 417, 424, HAVLÍČEK 65.

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†*Foliomena* gen. nov. type species *Strophomena folium* Barrande 1879 p. 413, 420, 427 figd. Ordovician Czechoslovakia, HAVLÍČEK Sborn. serv. géol. Tchécoslovaq. 19 1952.

†*Leptaena rhomboidalis* figd. p. 203 Silurian Norway, HOLTEDAHL 78; *L. rhomboidalis*, p. 317, 333, 342, *bouei* p. 317, GIGOUT 53; *L. rhomboidalis* figd. p. 90, DALE 30; *L. convexa* figd. pl. 53, SHIKAMA 164.

†*Rafinesquina deltoidea* figd. p. 195 Ordovician Norway, HOLTEDAHL 78; *R. deltoidea*, *praecursor* figd. p. 120 fig. 66, KAY 87; *R. mucronata*,

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†*Strophomena euglypha*, *hirundo* p. 302, figd. cf. *hipponyx* p. 318, 334, cf. *triculta* p. 318, GIGOUT 53.

†*Strophomenacea* diagnosed, with families *Strophomenidae*, *Stropheodontidae* p. 8, *Christianiidae* fam. nov. p. 9, WILLIAMS J. Wash. Acad. Sci. 43 1 1953.

†*Strophomenidae* diagnosed, with subfamilies *Strophomeninae* subfam. nov. *Leptaenidiinae* subfam. nov. WILLIAMS J. Wash. Acad. Sci. 43 1 1953.

†*Strophomenoidea* emended, with superfamilies *Plectambonacea* superfam. nov. p. 6, *Strophomenacea* p. 8, *Orthotetacea* superfam. nov. WILLIAMS J. Wash. Acad. Sci. 43 1 1953.

†*Strophonella patenta* figd. p. 90, DALE 30; *S.* Hall 1879 emend. p. 47, *S.* (*Strophonella*) emend. p. 48, *semifasciata*, sp., cf. *S. cavumbona* figd. pl. xiii, WILLIAMS 195.

†*Strophonella* (*Eostrophonella*) described p. 48, *eother* figd. pl. xiii, WILLIAMS 195.

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†*Amphistrophia* Hall and Clarke 1892 emend. p. 45, *striata*, aff. *funiculata* figd. pl. xii, WILLIAMS 195.

†*Cymostrophia* cf. *C. costulata* p. 55 figd., KIRK & AMSDEN 90; *C.* described p. 39 *stephani*, *patersoni* figd. pl. ix, WILLIAMS 195.

†*Douvillina* Oehlert 1887 emend. p. 43; *D.* (*Douvillina*) emend. p. 44, *arcuata* pl. iv, vi, aff. *inaequistriata*, sp. figd., pl. ii, xi, WILLIAMS 195; *D. ferquensis* p. 475, DAHMER & QUIRING 29.

†*Douvillina* (*Mesodouvillina*) described p. 44, internal structure *newsomensis* pl. iii, xi, xii, *subinterstitialis*, *seretensis* pl. xii, WILLIAMS 195.

†*Douvillinaria* described p. 45, *variabilis* figd. pl. xii, shell structure pl. ii, WILLIAMS 195.

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- †*Gampholusia* p. 42, WILLIAMS 195.
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- †*Hercostrophia* described p. 47, pl. vi, xii, *robusta*, sp. figd. pl. xiii, *alpensis*, WILLIAMS 195.
- †*Idioglyptus* p. 40, WILLIAMS 195.
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- †*Lissostrophia* described p. 37, WILLIAMS 195.
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- †*Megastrophia* (*Protomegastrophia*) emend. and described p. 39, *profunda* figd. pl. ix, WILLIAMS 195.
- †*Nervostrophia* Caster 1939 emended p. 41, *tulliensis* sp., *rockfordensis*, *calvini* pl. x, shell structure pl. i, internal structure pl. iv, WILLIAMS 195.
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- †*Shaleria* Caster 1939 emend. p. 46, *gilpeni* figd. pl. xii, WILLIAMS 195.
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- †*Shaleria* (*Telaeshaleria*) described p. 47, *sulcata* figd. pl. xii, WILLIAMS 195.
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- †*Stropheodonta* (*Stropheodonta*) emend. p. 35, *galatea* sp. figd. pl. vii, WILLIAMS 195.
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- †*Stropheodonta* (*Eostropheodonta*) described p. 35, *siluriana* figd. pl. vii, WILLIAMS 195.
- †*Stropheodonta* (*Leptostrophia*) *explanata* p. 318 figd., GIGOUT 53.
- †*Stropheodontidae* diagnosed p. 8, with subfam. *Stropheodontinae*, *Liljevallinae* subfam. nov. p. 9, WILLIAMS J. Wash. Acad. Sci. 43 1 1953.
- †*Strophomena* (*Stropheodonta*) aff. *diffusa* p. 318, GIGOUT 53.
- †*Strophonelloides* emend. p. 36, sp. fig. pl. vii, viii, internal structure pl. i, ii, WILLIAMS 195; *S. interior* of brachial and pedicle valves figured p. 7, WILLIAMS 194.

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†*Christiania tenuicincta* figd. p. 195 Ordovician Norway, HOLTEDAHL 78; *C. interior* of brachial and pedicle valves figured p. 7, WILLIAMS 194.

†*Christianiidae* fam. nov. p. 9, WILLIAMS J. Wash. Acad. Sci. 43 1 1953.

†*Mimulus* cf. *contrarius* p. 35, KEGEL 88.

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†*Derbyia* cf. *D. tapajotensis* p. 74 figd., *buchi* p. 75 figd., CHRONIC 21; *D. arellanoi* sp. nov. p. 22, *elongata* sp.

nov. p. 23, Middle Permian Mexico, COOPER Smithson. Misc. Coll. Washington 119 2 1953; *D. sp.* figd. pl. 21, NEWELL & others 130; *D. sulcata sp. nov.* p. 687 fig., Permian Texas, WALTER J. Paleont. 27 5.

†*Hamletella* **gen. nov.** type species *Streptorhynchus altus* Hamlet 1928. Permian Timor p. 92, *kitakamiensis sp. nov.* p. 93 figd., Middle Permian Kitakami Mts., Japan, HAMLET Trans. Proc. Palaeont. Soc. Japan n.s. 12 1953.

†*Kiangsiella pinguis* p. 76 figd., CHRONIC 21.

†*Meekella uncitoides* figd. pl. 12, SHIKAMA 164; *M. gigantea* figd. pl. 8, SHIKAMA 164; *M. skenoides* figd. pl. 21, NEWELL & others 130; *M. internal* structure of brachial and pedicle valves figured p. 11, WILLIAMS 194.

†*Orthotetes* ? *sp.* p. 73 figd., CHRONIC 21; *O. cf. crenistria* p. 342, GIGOUT 53.

†*Orthotetes* (*Schuchertella*) *umbra-culum* p. 317 figd., GIGOUT 53.

†Orthotetidae diagnosed, with subfamilies Orthotetinae, Schuchertellinae subfam. **nov.**, Davidsoniinae p. 9, WILLIAMS J. Wash. Acad. Sci. 43 1 1953.

†*Orthotetina* (*Schellwienella*) *sp.* p. 475, DAHMER & QUIRING 29.

†*Plicatoderbia* *sp.* figd. pl. 21, NEWELL & others 130.

†*Schellwienella* genus discussed, *alata sp. nov.*, p. 224 *inflata* p. 226 figd. Mississippian Ohio, HYDE Bull. Ohio Geol. Surv. 51 1953; *S. crenistria* p. 177, PAPROTH 136.

†*Schuchertella subplana* figd. p. 90, *interstriata* figd. p. 133, DALE 30; *S.* genus discussed p. 226, *perplana sp. nov.* figd. p. 227, *sciotoensis sp. nov.* p. 228 figd., *subcancellata sp. nov.* p. 230 figd., Mississippian Ohio, HYDE Bull. Ohio Geol. Surv. 51 1953; *S. portlockiana radialis*, *wexfordensis* p. 177, PAPROTH 136; *S. portlockiana* p. 16 figd., ZAK 199.

†*Streptorhynchus cyrano* p. 73 figd., *sp.* p. 74 figd., CHRONIC 21; *S. sp.* p. 24 figd., COOPER 25; *S. sp.* figd. pl. 21, NEWELL & others 130.

SCACCHINELLIDAE

†*Scacchinella* interior of brachial and pedicle valves figured p. 11, WILLIAMS 194.

†Scacchinellidae **fam. nov.** with *Scacchinella* Gemmellaro, WILLIAMS J. Wash. Acad. Sci. 43 1 1953 p. 12.

THECIDIIDAE

†*Bactrynium bicarinatum* figd. pl. 18, ELLIOTT 39.

†*Bifolium lacazelliforme sp. nov.* Cenomanian Cambridge, ELLIOTT Ann. Mag. Nat. Hist. (12) 6 1953 : 694, figd.

†*Eolacazella* **gen. nov.** type species *Thecidea affinis* Bosquet, *T. suessi*, *T. longirostris* p. 694, Upper Cretaceous Europe, ELLIOTT Ann. Mag. Nat. Hist. (12) 6 1953.

Lacazella mediterranea figd. pl. 18, ELLIOTT 39.

†*Moorellina* **gen. nov.** type species *Thecidea duplicata* Moore p. 693, *prima sp. nov.* figd., *T. buwignieri*, p. 694 *T. septata*, *T. triangularis*, *T. ornata*, Rhaetic to Upper Jurassic Europe, ELLIOTT Ann. Mag. Nat. Hist. (12) 6 1953.

†*Thecidea papillata* figd. pl. 18, ELLIOTT 39.

†*Vermiculothecidea* **gen. nov.** type species *Terebratulites vermicularis* Schlotheim Upper Cretaceous Europe ELLIOTT Ann. Mag. Nat. Hist. (12) 6 1953 : 694.

THECOSPIRIDAE

†*Thecospira* with *pseudopunctate* shell transferred from *Spiriferoidea* to *Strophomenoidea*, with family Thecospiridae Bittner 1893, interior of brachial and pedicle valves figd. p. 11, WILLIAMS 194.

†Thecospiridae diagnosed, with *Thecospira* Zugmayer, WILLIAMS J. Wash. Acad. Sci. 43 1 1953 p. 12.

OLDHAMINOIDEA

OLDHAMINIDAE

†*Gemmellaroia* interior of brachial and pedicle valves figd. p. 11, WILLIAMS 194.

†*Gemmellaroidae* fam. nov. p. 10 with *Gemmellaroia* Cossman, WILLIAMS J. Wash. Acad. Sci. 43 1 1953.

†*Leptodus richthofeni* (*Lyttonia richthofeni*) figd. pl. 12, SHIKAMA 164. *L. americanus* figd. pl. 21, NEWELL & others 130.

†Oldhaminoidea subord. nov. with families Oldhaminidae and Poikilosakidae fam. nov., WILLIAMS J. Wash. Acad. Sci. 43 9 1953 : 286.

POIKILOSAKIDAE

†Poikilosakidae fam. nov. of Oldhaminoidea subord. nov., WILLIAMS J. Wash. Acad. Sci. 43 9 1953 : 287.

PRODUCTOIDEA

PRODUCTACEA

PRODUCTIDAE

†*Anidanthus alatus* sp. nov. p. 30 figd., Middle Permian Mexico, COOPER Smithsonian. Misc. Coll. 119 2 1953.

†*Aulosteges guadalupensis* figd. pl. 21, NEWELL & others 130; *A.* subgen. *Strophalosia* p. 143, figd. p. 145, *S. (A.) horrescens* p. 147 figd., *longa* p. 150 figd., *fragilis* var. *lata* p. 152 figd. p. 153, var. *longitudinalis* p. 156 figd., SOKOLSKAYA 174.

†*Avonia* p. 80 (?) *boulei* p. 81 figd., CHRONIC 21; *A. concentrica* figd. p. 233, *rushvillensis* p. 234, *millespinosa* p. 235, *rushvillensis* mut. a p. 236, HYDE 80; *A.* p. 106, figd. p. 107, *praeyoungiana* sp. nov. p. 109 *youngiana* p. 111 figd., *sarytshevae* sp. nov. p. 115 figd., *costata* sp. nov. p. 117 figd., *echidniformis* p. 119 figd. Carboniferous Europe, SOKOLSKAJA Trans. Paleont. Inst. Acad. Sci. URSS. 14 3 1948.

†*Buxtonia peruviana* p. 83 figd., CHRONIC 21; *B. scabricula* p. 249 figd., HYDE 80.

†*Cancrinella phosphatica* p. 29 figd., COOPER 25; *C. villiersi* (?) p. 89 figd., CHRONIC 21; *C.* discussed, *magniplica* sp. nov. p. 7, figd. Permian Queensland, CAMPBELL Paprs. Dept. Geol. Univ. Queensland 4 3 1953.

†*Dictyoclostus depressus* sp. nov. p. 32 figd. Middle Permian Mexico, COOPER Smithsonian. Misc. Coll. 119 2

1953; *D. agmensis* sp. nov. p. 236 figd., *bovis* sp. nov. p. 239 figd., *nodocostatus* p. 243, *varicostatus* figd. p. 244, *sciotoensis* sp. nov. p. 247, aff. *sedaliensis*, aff. *fernnglenensis* p. 249, Mississippian Ohio, HYDE Bull. Ohio Geol. Surv. 51 1953; *D. boliviensis* p. 82 figd., sp. 1, sp. 2, p. 83 figd., CHRONIC 21; *D. cf. arcticus* figd. pl. 21, NEWELL & others 130.

†*Echinoconchus pelliceus* p. 85 figd., CHRONIC 21.

†*Heteralosia mexicana* sp. nov. p. 28 figd. Middle Permian Mexico, COOPER Smithsonian. Misc. Coll. Washington 119 2 1953.

†*Juresania hispida* p. 84 figd., CHRONIC 21.

†*Kansuella transdanubica* sp. nov. p. 18 figd. Lower Carboniferous Visean, Hungary, FÖLDVÁRI Acta geol. hung. 1 1-4 1952.

†*Krotovia* Fredericks emended Paeckelmann p. 122, figd. p. 123, *spinulosa* p. 124, *karpinskiana* p. 126 figd., SOKOLSKAJA 174.

†*Leptalosia* p. 75, figd. p. 76, *eletskiana* sp. nov. p. 77 figd., *prodica* sp. nov. p. 79 figd., *zadonica* sp. nov. p. 80 figd., SOKOLSKAJA Trans. Paleont. Inst. Acad. Sci. URSS. 14 3 1948.

†*Linoproductus cora* p. 88 figd., CHRONIC 21; *L. (?) guadalupensis* figured pl. 21, NEWELL & others 130.

†*Liosotella* gen. nov. type species *L. rugosa* sp. nov. p. 36, *angustata* sp. nov., *rugosa* sp. nov. p. 37 figd., *subrugosa* sp. nov. p. 39 figd., *magnirugosa* sp. nov., p. 40 all figured, Middle Permian Mexico, COOPER Smithsonian Misc. Coll. 119 2 1953.

†*Marginifera* sp. figd. pl. 21, NEWELL & others 130; *M.* sp. figd. pl. 21, NEWELL & others 130; *M.* sp. 1, p. 34, sp. 2 p. 35 figd., COOPER 25; *M. capaci* p. 86 figd., CHRONIC 21; *M.* sp. p. 701 figd., WALTER 190.

†*Muirwoodia* sp. p. 41 figd., COOPER 25.

†*Overtonia* ? sp. p. 85 figd., CHRONIC 21.

†*Planoproductus giganteoides* figd. pl. 53, SHIKAMA 164.

†*Plicatifera* p. 81 figd. p. 82, 84, ex. gr. *praelonga* p. 85, *fallax* p. 87 figd., var. *elongata* var. nov. p. 90 figd., var. *inflata* var. nov. p. 92 figd., *ivanovi* sp. nov. p. 93 figd., *kalmiusi* p. 96 figd., *tshernyshini* sp. nov. p. 98 figd., *zyabrovensis* sp. nov. p. 100 figd., *mesoloba* p. 102 figd., Upper Devonian and Lower Carboniferous Russia, SOKOLSKAJA Trans. Paleont. Inst. Acad. Sci. URSS. 14 3 1948.

†*Productus giganteus* var. *edeburgensis* figd. pl. 8, SHIKAMA 164. *P.* cf. *taiyuanfuensis* figured Jehol, Manchuria, NONAKA 181 p. 33; *P. occidentalis* figd. pl. 21, NEWELL & others 130; *P. semireticulatus* p. 342 figd., *concinus*, *costatus* figd. p. 343, *longispinus* figd., *tessellatus* figd. p. 344, *giganteus* p. 345 figd., GIGOUT 53; *P. ?* sp. figd. p. 691, WALTER 190.

†*Productus* (*Avonia*) sp. p. 180, PAPROTH 136.

†*Productus* (*Buxtonia*) *scabriculus* p. 338 figd., GIGOUT 53; *P. (B.) scabriculus* p. 180, PAPROTH 136.

†*Productus* (*Dictyoclostus*) cf. *dienstii*, *muir-woodi*, *pugilis*, *tristis* sp. nov. p. 182, Lower Carboniferous Germany PAPROTH. Paläont. Z. 27 3-4 1954.

†*Productus* (*Echinoconchus*) *elegans* p. 180, PAPROTH 136; *P. (E.) aff. crameri* p. 21, figd., ZAK 199; *P. (E.) crameri* p. 19 figd., ZAK 199.

†*Productus* (*Eomarginifera*) *lobatus flexus*, *simplex*, cf. *sudeticus*, *tissingtonensis*, sp. figd. p. 183, PAPROTH 136.

†*Productus* (*Gigantella*) *giganteus*, figd., *latissimus*, *l. complicatus*, cf. *sarytscheffi* p. 181, PAPROTH 136.

†*Productus* (*Krotovia*) *spinulosus* p. 180, PAPROTH 136; *P. (K.) nummularis* Winchell described from Upper Devonian Upper Famennian, Nakakura formation of Japan p. 123 figd., TACHIBANA 182.

†*Productus* (*Linoproductus*) cf. *conciniformis*, *continentalis* p. 181, PAPROTH 136; *P. (L.) continentalis* p. 21 figd. *striatus* var. *spinifera* p. 22 figd., ZAK 199.

†*Productus* (*Productus*) *redesdalensis* var. *silesiaca* p. 20, ZAK 199.

†*Productus* (*Pustula*) sp. p. 180, PAPROTH 136.

†*Productus* (*Sinuatella*) *gaablauensis* p. 18 figd., ZAK 199.

†*Strophalosia* p. 142 figd. p. 145, SOKOLSKAJA 174; *S. beecheri* figd. p. 231, HYDE 80.

†*Thomasina* p. 128, *margaritacea* p. 129, figd., SOKOLSKAJA 174.

†*Waagenoconcha* Chao 1927 emend. Ivanov 1935 p. 137, figd. p. 138, *krapiwnensis* sp. nov. p. 138 figd. p. 140, sp. p. 141 figd. Upper Palaeozoic, SOKOLSKAJA Trans. Paleont. Inst. Acad. Sci. URSS. 14 3 1948; *W. montpelierensis* p. 42 figd., COOPER 25; *W. humboldti* p. 86 figd., CHRONIC 21.

PRODUCTELLIDAE

†*Agramatia* gen. nov. type species *Productus agramati* Nalivkin 1934, p. 39, 40, fig. p. 41, 42, Upper Devonian Russia, SOKOLSKAJA Trans. Paleont. Inst. Acad. Sci. URSS. Moscow 14 3 1948.

†*Chonetipustula* p. 29, fig. p. 30, *petini* p. 32 figd., *membranacea* p. 35 figd., SOKOLSKAJA 174.

†*Chonopectus* p. 68, figd. p. 69, *elcicus* p. 70 figd., *rossicus* p. 73 figd., SOKOLSKAJA 174.

†*Praewaagenoconcha* gen. nov. type species *Productus orelianus* Moeller 1870 p. 132, 133 figd., Upper Devonian Russia, SOKOLSKAJA Trans. Paleont. Inst. Acad. Sci. URSS. 14 3 1948.

†*Productella* p. 43 figd. p. 46, *calva* p. 50 figd., var. *kosharica* var. nov. p. 53 figd. var. *multispinosa* var. nov. p. 54 figd., *subaculeata* p. 59 figd. p. 61, 62, *herminae* figd. p. 66, Upper Devonian Russia, SOKOLSKAJA Trans. Paleont. Inst. Acad. Sci. URSS. 14 3 1948; *P. caperta* figd. p. 337, GIGOUT 53.

CHONETACEA

CHONETIDAE

†*Chonetes* cf. *C. hessensis* p. 77 figd., sp. CHRONIC 21; *C.* sp. interior of brachial valve figd., SOKOLSKAJA 174 p. 34; *C. foshagi* sp. nov. p. 25, *gibberulus* sp. nov. p. 26, *monosensis*

sp. nov. p. 27 all figured Middle Permian Mexico, COOPER Smithson. Misc. Coll. Washington 119 2 1953; *C. cornutus* = [*cornutus*] figd. p. 90, DALE 30; *C. tenuicosta*, figd. aff. *tenuicosta* p. 319, GIGOUT 53; *C.* sp. figd. p. 207 Silurian Norway, HOLTEDAHN 78; *C. glenparkensis* p. 231 figd., HYDE 80; *C. soror* p. 27, KEGEL 88; *C. permianus* figd. pl. 21, NEWELL & others 130; *C. infantilis* sp. nov. p. 15 figd. L^r. Silurian Victoria, ÖRIK Mem. geol. Surv. Victoria Australia 19 1953; *C.* sp. figd. pl. 12, SHIKAMA 164; *C. laquessiana* p. 17 sp. p. 18 figd., ZAK 199.

†*Chonetes* (*Chonetes*) *kayseri* figd., *laquessiana* figd., var. *angusta* p. 178, *longispinus*, *mosensis*, cf. *siblyi*, *zelteri* figd. p. 179, PAPROTH 136.

†*Chonetes* (*Daviesiella*) *papilio* p. 180, PAPROTH 136.

†*Chonetes* (*Plicochonetes*) *crassistrius minima*, *waldschmidtii* p. 180, PAPROTH 136.

†*Chonetes* (*Tornquistia*) *politus* p. 177, *schmiereri* p. 178, PAPROTH 136.

†*Daviesiella comoidea* figd., p. 346 GIGOUT 53; *D. destinezi* internal structure, SIMPSON 168 p. 193 fig.

†*Eodevonaria dilatata* p. 320 figd., GIGOUT 53.

†*Lissochonetes* discussed, *semicircularis* sp. nov. p. 6 figd., Permian Queensland, CAMPBELL Paprs. Dept. Geol. Univ. Queensland 4 3 1953; *L. amazonicus* (?) p. 78 figd., *assula* p. 79, figd., CHRONIC 21; *L. subliratus* figd. pl. 21, NEWELL & others 130.

RICHTHOFFENIDAE

†*Prorichthofenia* sp., *permiana*, figd. pl. 21, in section pl. 27, NEWELL & others 130.

TELOTREMATA

RHYNCHONELLACEA

STENOCISMATIDAE

†*Camarophoria meyeri* var. *tetraplicata* figd. pl. 7, SHIKAMA 164.

†*Stenosisma* sp. p. 55 figd., COOPER 25; *S. venusta* figd. pl. 21, NEWELL & others 130.

CAMAROTOECHIIDAE

†*Camarotoechia nucula* figd. p. 207 Silurian Norway, HOLTEDAHN 78; *C. magna* sp. nov. p. 251 Mississippian Ohio, HYDE Bull. Ohio Geol. Surv. 51 1953; *C. reesidei* sp. nov. p. 57 figd. & transverse sections, sp. p. 58 figd. Upper Silurian Alaska, AMSDEN Geol. Surv. Wash. Prof. Pap. 233 C 1952; *C.* (?) *humilis* figd. p. 29, *acinus* p. 89, *neglecta* figd. p. 90, DALE 30; *C.* cf. *ferquensis* p. 476, DAHMER & QUIRING 29.

†*Leiorhynchus* sp., *bisulcatum* figd. pl. 21, NEWELL & others 130; *L.* aff. *L. rockymontanum* p. 53 figd., CHRONIC 21.

†*Leiorhynchoidea claudi* sp. nov. p. 44, figd. Middle Permian Mexico, COOPER Smithson. Misc. Coll. 119 2 1953.

†*Plekonella* gen. nov., type species *P. acuta* sp. nov., p. 17, 18 figd., transverse sections p. 18, Permian Queensland, CAMPBELL Paprs. Dept. Geol. Univ. Queensland 4 3 1953.

†*Pugnax* ? *nitida* figd. pl. 21, NEWELL & others 130; *P. acuminata* p. 184, PAPROTH 136; *P. acuminatus* figd. pl. 8, SHIKAMA 164.

†*Rhynchonella* (*Camarotoechia*) cf. *daleidensis* p. 328, *pleurodon* p. 340, 349, GIGOUT 53.

†*Rhynchonella* (*Pugnax*) *acuminata* p. 335, 349, *pugnax* p. 340 figd., GIGOUT 53.

†*Rhynchonella* (*Uncinulus*) *tarda* p. 304, *orbignyanus*, *primipilaris* figd. p. 335, GIGOUT 53.

†*Rhynchopora magnicosta amotapensis* p. 93 figd., aff. *R. illinoisensis* p. 94 figd., CHRONIC 21; *R. taylori* p. 47 figd. *t. rotunda* subsp. nov. p. 48, figd., *bicostata* sp. nov. p. 49 figd., Middle Permian Mexico, COOPER Smithson. Misc. Coll. 119 2 1953; *R. altiplicata* sp. nov. p. 281 figd., *contracta*, *persinuata* p. 282 figd., Mississippian Ohio, HYDE Bull. Ohio Geol. Surv. 51 1953; *R.* (?) *deloi* ? figd. pl. 21, NEWELL & others 130; *R. pustulosa* figd. p. 14, ZAK 199.

†*Rhynchotretra cuneata* figd. p. 207 Silurian Norway, HOLTEDAHN 78.

†*Stegerhynchus* (?) *bidens* figd. p. 28 pl. 10, FISHER 42.

†*Uncinunellina* ? *pulchra* sp. nov. Middle Permian Mexico, COOPER Smithson. Misc. Coll. 119 2 1953 p. 46.

†*Wellerella osagensis, peruviana* p. 53 figd., *bidentata, parva* p. 56 figd., *minuta* p. 57 figd., CHRONIC 21; *W. hemiplicata* sp. nov. p. 50, *lemasi* sp. nov. p. 51 figd., *l. minor* subsp. nov. p. 52, *rotunda* sp. nov. p. 53 figd., sp. p. 54 Middle Permian Mexico, COOPER Smithson. Misc. Coll. 119 2 1953; *W. cf. osagensis* figd. pl. 21, NEWELL & others 130; *W. elegans* p. 689 figd., WALTER 190.

†*Wilsonia wilsoni* figd. p. 207 Silurian Norway, HOLTEDAHN 78.

RHYNCHONELLIDAE

†*Cryptorhynchia kawhiana* figd. p. 84 Bathonian Callovian New Zealand, MARWICK 113.

†*Halorella* sp. figd. p. 100, DROT 36.

Hemithyris psitt[ac]acea subsp. woodwardi recorded from Recent Seas and Fossil, Pliocene, HAYASAKA & UOZUMI 69.

†*Rhynchonella richardsoni, sublacunosa, subplicatella* recorded Somaliland, COLIVICCHI 22 p. 108; *R. sp.* p. 98 figd., sp. *pomeyrol* sp. nov. p. 99 figd. Lower Lias New Caledonia, DROT Sciences de la Terre 1 1-2 1953; *R. triloboides* from White Jura silicified and derived in Lower Cretaceous Bavaria, FREYBERG 50 p. 155; *R. aff. borealis* figd. p. 304, aff. *minerva* p. 305 figd., aff. *princeps* p. 305, cf. *ancillans* p. 306, *amalthaea* p. 327 figd., *eucharis, princeps* var. *subwilsoni* figd., aff. *pugnus*, cf. *tetratoma* p. 328, *letiensis* p. 340 figd., *multiformis* p. 359, GIGOUT 53; "*R.*" *supraoligocaenica* sp. nov. p. 5 figd. Upper Oligocene N. Germany, GÖRGES Paläont. Z. 26 1-2 1952; *R. aff. oxynoti, amalthei* figd. fig. 31, JORDANA & KINDELÁN 85; *R. contorta* figd. pl. 5, MARKOVIĆ-STEFANOVIĆ 112; *R. maorica* figd., *nuggetensis* figd., *zealandica* figd., sp. p. 32, *bartrumi* sp. nov. p. 84 figd., U^r. Lias, Toarcian, New Zealand MARWICK Paleont. Bull. Geol. Surv. N.Z. 21 1953; "*R.*" cf. *triplicosa* p. 4 fig., cf. *atla* p. 5 fig. Callovian cf. *decipiens* p. 8 fig. from the Cretaceous, Infracallovian E. Green-

land, MUIR-WOOD 126; "*R.*" *correcta, schopeni* described from Gibraltar, MUIR-WOOD 127 p. 164; *R. cartieri* p. 120 figd., c. var. *lorioli* p. 121 figd. c. var. *depressa* var. nov. p. 122 figd., *greppini* p. 124 figd., *laevicosta, latifrons*, p. 125 both figd., *plicatissima* var. *rectemarginata* p. 126 figd., *polyptycha* p. 127, *torrii* sp. nov. p. 128, t. var. *albenzensis* var. nov. p. 130 figd., *uhi* p. 132 figd., RONCHETTI & BRENA Riv. ital. pal. strat. Milano 59 3 1953; *R. sambosanensis* figd. pl. 15, *haradoti* pl. 19, SHIKAMA 164; *R. fastigata* figd. pl. 3, SIKOŠEK 167; *R. fastigata* figd. pl. 1 *spathica* pl. ii, VESELENOVIĆ 185; *R. pleurodon* p. 13 figd., ZAK 199.

†*Rhynchonella* (*Bihendulirhynchia*) *afra* recorded Somaliland, COLIVICCHI 22 p. 108.

†*Rhynchonella* (*Burmishrhynchia*) *sofalica* p. 108 recorded Somaliland, COLIVICCHI 22.

†*Rhynchonella* (*Cymatorhynchia* ?) *quadruplicata* recorded Somaliland p. 108, COLIVICCHI 22.

†*Rhynchonella* (*Somalirhynchia*) *aficana*, a. var. *smellie*, a. var. *mesoloba*, a. var. *jordanica, bihinensis*, recorded Somaliland p. 108, COLIVICCHI 22.

Tegulorhynchia nigricans development of larva, orientation of valves found to be the reverse of that described in *Terebratella inconspicua* in 1944 in which pedicle valve was thought to be dorsal. This is now emended to ventral. PERCIVAL 141 p. 436.

SPIRIFEROIDEA

ATRYPACEA

ATRYPIDAE

†*Atrypa reticularis, nodostriata* figd. p. 89, DALE 30; *A. desquamata* mut. *japonica* mut. nov. from Middle Devonian Japan, SUGIYAMA 180 p. 75 fig. 1 p. 74; *A. n. sp.* figd. p. 151, RÖSLER 153; *A. cf. A. reticularis* p. 63 figd., KIRK & AMSDEN 90; *A. cf. insolita, reticularis* cf. *renitens*, KEGEL 88 p. 34; *A. reticularis* figd. p. 203 Silurian Norway, HOLTEDAHN 78; *A. reticularis* p. 320, 334, GIGOUT 53; *A. reticularis* p. 476, DAHMER & QUIRING 29.

†*Atrypella scheii* (?) p. 58 fig. transverse sections, *tenuis* sp. nov. p. 59 fig. transverse sections p. 60, *borealis* sp. nov. p. 60 fig. transverse sections, Upper Silurian S.E. Alaska, KIRK & AMSDEN Geol. Surv. Prof. Pap. Washington 133 C 1952.

†*Septatrypa megaera* p. 30, *sappho* p. 31, s. var. a p. 32, var. b. (?) *thisbe* p. 33, KEGEL 88.

†*Zygospira concentrica* figd. p. 29, DALE 30.

COELOSPIRIDAE

†*Coelospira planoconvexa, uniplicata* figd. p. 28 pl. 10, *hemispherica* p. 29 pl. 11, FISHER 42; *C. hemispherica* figd. p. 90, DALE 30.

SPIRIFERACEA

SPIRIFERIDAE

†*Acrospirifer* subgen. of *Hystero-*
lites discussed p. 12, *arduennensis* p. 29, *a. arduennensis* p. 30, *a. latestriatus* figd. form α , β , p. 45, *a. antecedens* figd. p. 56, *arduennensis* s.l. p. 67, 69, *extensus* sp. nov. figd. p. 70, *maturus* p. 79 figd., *mosellanus* sp. nov. p. 83 figd., *m. mosellanus* subsp. nov. p. 86 figd., *m. gracilis* subsp. nov. p. 91 figd., *m. steiningeri* subsp. nov. p. 95 figd., form α , p. 96, β , p. 100, *m. dahmeri* subsp. nov. p. 102 figd., *mosellanus* subsp. p. 107 figd., *schreiberi* p. 108 figd., *aequicosta* p. 112 figd., *intermedius* p. 113, *i. intermedius* p. 118 figd., *i. vetustus* subsp. nov. p. 121 figd., *i. ovatus* subsp. nov. p. 124 figd., *i. entomus* subsp. nov. p. 126 figd., *i. dissectus* subsp. nov. p. 128 figd., *intermedius* subsp. n. p. 131, *bicostatus* sp. nov. p. 131 figd., *supraspeciosus* p. 133, s. *supraspeciosus* p. 135 figd., s. *polymorphus* subsp. nov. p. 137 figd., s. *divaricatus* subsp. nov. p. 138 figd., s. *fuchsianus* p. 140 figd., *intermedius*, *supraspeciosus* p. 141, Devonian Germany, SOLLE Abh. hess. Landesamt. Bodenforsch. 5 1953.

†*Alaskospira* gen. nov. type *A. dunbari* Kirk & Amstden p. 61, figd. serial sections p. 62, Upper Silurian Alaska, KIRK & AMSDEN Geol. Surv. Wash. Prof. Pap. 233 C 1952.

Allanella gen. nov. type species *Spirifer allani* Warren p. 5, 6. *minutilla* sp. nov. p. 7. Middle Devonian Canada, CRICKMAY 26.

†*Brachythyris nagaoi* figd. pl. 53, SHIKAMA 164.

†*Brachythyris kitakamiensis* figd. pl. 53, SHIKAMA 164; *B. suborbicularis* p. 252, HYDE 80.

†*Cancellospirifer* gen. nov. type *C. maxwelli* sp. nov. p. 11, 12 figd. sections p. 12 Permian Queensland, CAMPBELL Paprs. Dept. Geol. Univ. Queensland 4 3 1953.

†*Cond Rathyris* gen. nov. type species *Squamularia ? perplex[a]* (McChesney) of Dunbar & Condra 1932, pl. 42, figs. 5-8, Pennsylvania, MINATO Trans. Proc. Palaeont. Soc. Japan N.S. 11 1953 p. 69 text-fig. 3.

†*Crurithyris planoconvexa* p. 65 figd., CHRONIC 21; *C. planoconvexa* figd. pl. xlix, p. 390, TASCH 183.

†*Cyrtia exporrecta* figd. p. 207 Silurian Norway, HOLTEDAHN 78.

†*Cyrtospirifer verneuili vicarii*, sp. aus der *verneuili*-Gruppe, p. 477, DAHMER & QUIRING 29.

†*Delthyris* cf. *similis* p. 253, HYDE 80; *D. ?* sp. p. 63 fig., KIRK & AMSDEN 90.

†*Eleutherokomma impennis* sp. nov. *jasperensis* p. 3, figd., *killeri* p. 4, *hamiltoni*, *leducensis* p. 5 figd., Middle Devonian Canada, CRICKMAY 26.

†*Elivina* (?) *sulcifer* figd. pl. 21, NEWELL & others 130.

†*Emanuella* p. 312, *sanctacrucensis* sp. nov. p. 313 figd. p. 314, 316, 317, *parva* sp. nov. p. 317 figd. p. 318, 319 Middle Devonian (L. Givetian) Poland, BIERNAT Acta geol. Polon. 3 1953.

†*Eospirifer* sp. p. 63 fig., KIRK & AMSDEN 90.

†*Georgethyris* gen. nov. type species *Reticularia alexandri* George 1932, Lower Carboniferous England, MINATO Trans. Proc. Palaeont. Soc. Japan N.S. 11 1953 p. 65, 68 and text-fig. 3.

†*Grantonia* gen. nov. p. 60 type species *G. hobartensis* sp. nov. p. 61, figd. Permian Tasmania, BROWN J. Roy. Soc. N.S.W. 86 2 1953.

†*Howellella* sp. p. 63 fig., KIRK & AMSDEN 90.

†*Hysterolites* discussed p. 9, SOLLE 175.

†*Hysterolites* (*Acrospirifer*) *bouchardi* p. 476, DAHMER & QUIRING 29.

†*Kitakamithyris* genus discussed type species, *Torynifer* (*K.*) *tyoanjiensis* Minato, MINATO 121 p. 71 text-fig. 3.

†*Martinia glabra* var. *symmetrica* p. 348 figd., GIGOUT 53; *M.* sp. figd. pl. 8, SHIKAMA 164; *M. shumardiana*, *rhomboidalis* figd. pl. 21, NEWELL & others 130; *M.* cf. *glabra* p. 185, PAPROTH 136.

†*Martiniopsis* genus discussed and figd., p. 100, transverse sections of *M. inflata* Waagen type species p. 101, 104, variation tables p. 105, BROWN 19; "*M.*" non Waagen 1884 of Etheridge 1892 p. 10, CAMPBELL 20.

†*Martinothyris* gen. nov. type species *Phricodothyris lineata* (Martin) of George 1932, p. 545, fig. 6. Lower Carboniferous, MINATO Trans. Proc. Palaeont. Soc. Japan N.S. 11 1953 p. 70 text-fig. 3.

†*Mentzelia* cf. *ampla*, *kawhiana* figd. p. 34, MARWICK 113.

†*Mentzeliopsis spinosa* p. 87 figd., DROT 36; *M. spinosa* figd., *horrida* p. 35, MARWICK 113.

†*Nebenothyris* gen. nov. type species *Spirifer* (*Reticularia*) *lineatus* Nebe 1911 non Martin, MINATO Trans. Proc. Palaeont. Soc. Japan N.S. 11 1953 p. 72 text-fig. 3.

†*Neospirifer* sp. 1 p. 60, 2, p. 61, figd., COOPER 25; *N. cameratus* p. 59 figd., *condor* p. 60 figd., CHRONIC 21; *N.* discussed, sp. p. 9 figd., CAMPBELL 20; *N. fasciger*, *condor* figd. pl. v, BROWN 18; *N. pseudocameratus* figd. pl. 21, NEWELL & others 130.

†*Phricodothyris septata* p. 62 figd., *guadalupensis peruensis* p. 63 figd., CHRONIC 21; *P.* genus discussed type species quoted as *Phricodothyris lucerna* George 1932, MINATO 121 p. 68.

†*Pseudomartinia martinezi* sp. nov. p. 59, Middle Permian Mexico, COOPER Smithsonian. Misc. Coll. 119 2 1953.

†*Pseudosyrinx* sp. nov. p. 13 figd., CAMPBELL 20.

†*Reticularia* type species discussed p. 65 and quoted as *Reticularia imbricata* (Sowerby) p. 67, MINATO 121.

†*Sinothyris* gen. nov. type species *Reticularia maurerei* Holzappel. [err. pro *maureri*] Devonian, MINATO Trans. Proc. Paleont. Soc. Japan N.S. 11 1953 p. 68, text-fig. 3.

†*Spirelytha* genus defined type species given as *Spirifer schei* Tschernyschew 1916, MINATO 121 p. 71 text-fig. 3.

†*Spirifer plicatellus, elevatus*, figd. p. 207 Silurian Norway HOLTEDAHL 78; *S. inchoans* figd., *plicatellus* var. *radiatus* p. 303 figd., cf. *rousseavi*, sp. aff. *carinatus-rousseavi* figd., *nerei*, cf. *nerei* figd. p. 323, *nereides* p. 324 figd., *secans, togatus*, cf. *togatus* p. 326, *julii* and var. p. 339 figd., *striatus, bisulcatus* p. 346, *trigonalis* figd., *grandicostatus* figd. p. 347, GIGOUT 53; *S. centronatus* p. 258, c. var. *invalidistriata* var. nov. *striatiformis* p. 260, Mississippian Ohio, HYDE Bull. Ohio Geol. Surv. 51 1953; *S.* sp. KEGEL 88; *S. humerosus* figd. pl. 8, SHIKAMA 164; *S.* aff. *S. opimus* p. 58 figd., CHRONIC 21; *S. bisulcatus, b. calcaratus, b. oyster-mouthensis* p. 184, cf. *pinguis rotundata, striatus*, cf. *triangularis* p. 185, PAPROTH 136; "*S.*" *radiatus* figd. p. 90, *vanuxemi* figd. p. 133, DALE 30.

†*Spirifer* (*Acrospirifer*) *pellicoi*, aff. *pellicoi* figd. p. 324, *fallax* p. 325, GIGOUT 53.

†*Spirifer* (*Choristites*) *jigulensis* figd. pl. 7, SHIKAMA 164.

†*Spirifer* (*Cyrtospirifer*) *verneuili* p. 339, GIGOUT 53.

†*Spirifer* (*Eospirifer*) *inchoans* p. 36, KEGEL 88.

†*Spirifer* (*Hysterolites*) *hystericus* p. 320 figd., *carinatus* c. var. *latisima* p. 321 figd., *rousseavi* and vars. p. 322 figd., *jaschei* figd. p. 327, GIGOUT 53.

†*Spirifer* (*Munella*) *nikitini* figd. pl. 6, *tschernyschewiformis* pl. 7, SHIKAMA 164.

†*Spirifer* (*Trigonotreta*) *verneuili* figd. pl. 6, SHIKAMA 164.

†*Spiriferella* ? *scobinoidea* sp. nov. p. 62, sp. 1, 2, p. 64 figd. Middle Permian Mexico, COOPER Smithsonian Misc. Coll. 119 2 1953; *S.* (?) *mexicana* figd. pl. 21, NEWELL & others 130.

†*Squamularia* genus defined p. 65, genolectotype *Squamularia rotundata* Gemmellaro 1899, text-fig. 3, MINATO 121; *S. asiatica* figd. pl. 6, SHIKAMA 164; *S.* cf. *asiatica* p. 189 figd., NONAKA 131.

†*Straelenia* *minor* figd. p. 329, GIGOUT 53.

†*Syringothyris cuspidatus* figd. pl. 8 SHIKAMA 164; *S.* genus discussed p. 263, *bedfordensis* sp. nov. p. 268 figd., *carteri* p. 270 figd., *chemungensis* p. 273 figd., cf. *halli* figd., *herricki* p. 275 figd., *typus* var. *waverliensis* var. nov. p. 278 figd., Mississippian Ohio, HYDE Bull. Ohio Geol. Surv. 51 1953.

†*Torynifer pseudolineata* p. 280 figd., HYDE 80; *T.* genus discussed and type species given as *Torynifer criticus* Hall & Clarke, MINATO Trans. Proc. Palaeont. Soc. Japan N.S. 11 1953 p. 71 text-fig. 3.

†*Torynifer* (*Kitakamithyris*) *tyoanjiensis* figd. pl. 53, SHIKAMA 164.

†*Trigonotreta* genus discussed p. 56, *stokesii* (type species), redescribed p. 58, BROWN 18.

†*Tylothyris subconica subconica* p. 184, PAPROTH 136.

†*Vandergrachtella* gen. nov. type species *V. arcuum* sp. nov. p. 7 *keenei* sp. nov., *arcuum* sp. nov. p. 8 figd., *radina* sp. nov. p. 9, *kobayashii* sp. nov., *scopulorum* sp. nov. p. 10 Upper Devonian Alberta or N.W. Territories, Canada, CRICKMAY 26.

†*Warrenella* gen. nov. type species *W. eclecta* sp. nov. p. 596 Upper Devonian Cheviot formation Mt. Mackenzie W. of 5th meridian, Alberta Canada, *apodecta* sp. nov., *franklinii* Meek p. 598, Middle or Upper Devonian Canada, CRICKMAY J. Paleont. 77 4 1953.

SPIRIFERINIDAE

†*Clavigera* defined, *bisulcata* figd. p. 45, *tumida*, *cuneiformis* p. 46 both figured *cuneiformis* p. 86 figd., MARWICK 113; *C. bisulcata* p. 247, *droti* sp. nov. (*Avias*) p. 248 Rhaetic New Caledonia, AVIAS & DROT C.R. Soc. géol. Fr. 12 1952; *C. bisulcata* p. 92 figd., *drotae* p. 93 figd. and transverse sections, DROT 36.

†*Cyrtina rigauxi* p. 477, DAHMER & QUIRING 29.

†*Psioidea* (?) *australis* p. 95 figd., sp. nov. p. 96 figd., DROT 36; *P.* subgenus of *Spiriferina* p. 38, *conjuncta* figd. p. 39, *nelsonensis*, *australis* p. 40 figd., MARWICK 113.

†*Punctospirifer convexus* sp. nov. p. 67 figd., Middle Permian Mexico, COOPER Smithsonian Misc. Coll. 119 2 1953; *P. billingsi*, sp. figd. pl. 21, NEWELL & others 130; *P. patulus* p. 96 figd., *adstrictus* p. 98 figd., *inflatus* p. 99 figd., sp. p. 100, CHRONIC 21.

†*Punctothyris* gen. nov. type species, *P. argus* Hyde, p. 288, 289 figd. Mississippian Ohio, HYDE Bull. Ohio Geol. Surv. 51 1953.

Rastelligera subgenus *Spiriferina* *elongata* figd. p. 41, *acutissima* figd., *gypaetus* figd. p. 42, MARWICK 113; *R.* cf. *elongata* p. 95 figd., DROT 36.

†*Reticulariina* sp. A, B, figd. pl. 21, NEWELL & others 130; *R.* p. 100 (?) cf. *spinosa*, *atava* p. 100 figd., *fruticosa* p. 102 figd., *constricta* p. 103 figd., CHRONIC 21.

†*Spiriferellina laxa* p. 68 figd., *sonorensis* sp. nov. p. 69 figd., Middle Permian Mexico, COOPER Smithsonian Misc. Coll. 119 2 1953; *S.* p. 13 discussed p. 13, sp. nov. p. 14 figd., CAMPBELL 20.

†*Spiriferina alpina* p. 131, var. *falloti* p. 132, *rostrata* p. 133, *villosa*, *nicklesi*, *gryphoidea*, *brevirostris* p. 135, *undata*, *angulata*, *acuta*, *gibra*, *obtusa* var. *conclusa*, *tumida* p. 136, *t.* var. *rupestris*, var. *ascendens*, p. 137, *t.* var. *haueri*, *hartmanni*, *h.* var. *gigantea* p. 138, *verrucosa*, *walcotti* p. 139, *w.* var. *betacalcis*, *w.* var. *munsteri*, *sampelayoi* p. 140, *oxyptera*, *deslongchampsii* p. 141 *di Stefanoi*,

torbolensis p. 142 distribution in Lias of Spain, BATALIER 11; *S. kaihiukuana* p. 88 figd. *parki*, sp. p. 89 figd., cf. *orophila*, *gregaria* p. 90 figd., cf. *fragilis*, cf. *acutissima* p. 91 figd., cf. *gypaetus* p. 92 figd., DROT 36; *S. kancharai* figd. pl. 15, SHIKAMA 164; *S. octoplicata* p. 14 figd., ZAK 199; *S. radiata* Upper Lias figd. p. 85, *ongleyi* sp. nov. p. 86 Lower Lias. New Zealand, MARWICK Paleont. Bull. Geol. Surv. N.Z. 21 1953; *S. kaihiukuana*, *caroliniae*, *trechmanni* p. 36 all figd., *fragilis*, *otamitensis*, *parki* figd. p. 37, *novoseelandica* figd. p. 38, MARWICK 113.

ROSTROSPIRACEA

MERISTELLIDAE

†*Hyattidina congesta* figd. p. 29 pl. 11, FISHER 42.

†*Merista* ? aff. *laevis* figd. p. 329, GIGOUT 53.

†*Meristella laevis* figd. p. 133, DALE 30; *M.* (?) *crassa* figd. p. 203 Silurian Norway, HOLTEDAHN 78.

†*Nucleospira pisiformis* figd. p. 89, DALE 30; *N. pisum* p. 37, KEGEL 88; *N. hecetesensis* sp. nov. p. 61 fig. Upper Silurian S.E. Alaska, KIRK & AMSDEN Geol. Surv. Prof. Pap. Washington 133c 1952.

†*Tyrothyris* gen. nov. type species *T. tyro* sp. nov. p. 15, *melicerta* sp. nov. p. 17 both figd. L^r. Silurian Victoria, ÖPIK Mem. geol. surv. Victoria Australia 19 1953 [a punctate Meristellid.]

†*Whitfieldella intermedia* figd. p. 90, DALE 30.

RHYNCHOSPIRINIDAE

†*Hustedia* cf. *H. meekana* p. 701 figd., WALTER 190; *H.* (?) sp. p. 190 figd., NONAKA 131; *H. meekana* figd. pl. 21, (?) sp. in rock section pl. 31, NEWELL & others 130; *H. sicuanensis* p. 104 figd., *meridionalis* p. 105 figd., CHRONIC 21; *H. meekana* p. 65 figd., *m. plicatella* subsp. nov. p. 66 figd., *elongata* sp. nov. p. 67 fig., COOPER Smithsonian. Misc. Coll. 119 2 1953.

†*Ptychospira magna* sp. nov. Mississippian Ohio, HYDE Bull. Ohio Geol. Surv. 51 1953.

†*Retzia reticulata*, *morganiana* p. 43 both figured, MARWICK 113; *R.* (?) *umbra* p. 37, KEGEL 88.

†*Retzia* (*Trigeria*) *radialis* p. 14 figd., ZAK 199.

†*Trigeria guerangeri* p. 329, GIGOUT 53.

ATHYRIDAE

†*Actinoconchus planosulcatus* p. 185, PAPROTH 136.

†*Athyris leveillei* p. 185, PAPROTH 136; *A. concentrica*, *undata* p. 327 figd., *royssii* p. 340, 348 figd., sp. figd., p. 348, GIGOUT 53; *A. kaihiukuana* p. 43 figd., *wreyi* figd., *manzavinioides* p. 44, MARWICK 113; *A. lamellosa* figd. p. 255, HYDE 80; *A. wreyi* p. 96 figd., cf. *kaihiukuana* p. 97 figd., cf. *manzavinioides* p. 98 figd., DROT 36.

†*Camarophorella mutabilis* p. 254, HYDE 80

†*Cleiothyridina barbata* p. 67 figd., *intonsa* p. 68 figd., CHRONIC 21; *C.* discussed, sp. nov. p. 16 figd., CAMPBELL 20.

†*Composita* cf. *C. guadalupensis* p. 690 figd., WALTER 190; *C. mira* figd. pl. 21, NEWELL & others 130; *C. grandis* sp. nov. p. 56 figd., Middle Permian Mexico, COOPER Smithsonian. Misc. Coll. 119 2 1953; *C. subtilita peruviana* p. 69 figd., *minuscule* p. 72 figd., sp. p. 73, CHRONIC 21.

†*Spirigera subcompressa* p. 34; KEGEL 88.

†*Spirigerella* discussed, sp. nov. p. 15, figd., CAMPBELL 20.

GRYPHOIDEA

TEREBRATULACEA

STRINGOCEPHALIDAE

†*Bornhardtina* p. 301, *skalensis* sp. nov. p. 302, fig. p. 303-309, 113 Middle Devonian (L^r. Givetian) Poland, BIERNAT Acta Geol. Polon. 3 1953.

†*Renssellandia* Hall 1867 and *Newberria* Hall 1891 objective synonyms Type species *Rensselaeria johannis* Hall 1867. Question discussed with proposed retention of *Newberria* SCHMIDT 159 p. 174.

DIELASMATIDAE

†*Dielasma scitulum* p. 95 figd., *rotundum* p. 96 figd., CHRONIC 21; *D. cf. himalayana* sp., p. 101 figd., DROT 36; *D. hastatum gillingensis* p. 185, PAPROTH 136; *D. new* sp. figd. p. 189, NONAKA 131; *D. zealandica* figd., cf. *himalayana* p. 33, MARWICK 113; *D. spatulatum* figd. pl. 21, NEWELL & others 130; *D. hastata* p. 349 figd., GIGOUT 53; *D. floresi* sp. nov. p. 74 figd., cf. *D. prolongatum* p. 75 figd., cf. *D. spatulatum* p. 76 figd. Middle Permian Mexico, COOPER Smithson. Misc. Coll. 119 2 1953.

†*Girtyella flora* p. 256 figd., HYDE 80.

†*Glossothyropsis* redefined p. 72, *magna* sp. nov. p. 73 figd., Middle Permian Mexico, COOPER Smithson. Misc. Coll. 119 2 1953.

†*Heterelasma contrerasi* sp. nov. p. 71 figd., sp. p. 72 figd. Middle Permian Mexico, COOPER Smithson. Misc. Coll. 119 2 1953.

TEREBRATULIDAE

†*Antinomia* cf. *sima* p. 6 fig. ?Upper Portlandian E. Greenland, MUIR-WOOD 126.

†*Gryphus kurotakiensis* figd. pl. 55, SHIKAMA 164.

†*Kutchithyris hendersoni* sp. nov. figd. p. 85, Bathonian-Callovian New Zealand, MARWICK Paleont. Bull. Geol. Surv. N.Z. 21 1953.

†*Pygope aspasia* p. 120 figd., RONCHETTI & BRENA 152.

†*Terebratula albescens* sp. nov. p. 153 figd. Upper Senonian or Danian Patagonia, FERUGLIO Pubbl. Inst. Geol. Univ. Torino 2 1953; '*T. mediterranea*, var. *elongata*, var. *pectita* described from Gibraltar, MUIR-WOOD 127 p. 164; *T. perovalis*, *phil[ippi]*, *maxillata*, *globata* figd. pl. i, *stephani* pl. ii, VESELINOVIC 185; *T. perovalis* figd. pl. 3, SIKOSEK 167; *T. hoernesii*, VIGNEAUX & BUGE 186 p. 24; *T. sp.* p. 5 fig., from the Callovian of E. Greenland, MUIR-WOOD 126; *T. carteroniana* figd., *salevensis* figd., *valdensis*, *moutoniana* figd., *sueuri* figd., p. 360, *brivesi* figd., *euthymi* figd., p. 361, *biplicata* p. 376 figd., GIGOUT 53;

T. stefaninii sp. nov. Jurassic Somaliland p. 103, figd., *acutiplicata*, p. 106, *bisuffarcinata*, *bourgueti*, *pyroidea*, *jumarensis*, *euryptica*, *subrhomboidalis*, cf. *ingluvirosa*, cf. *longiplicata*, cf. *zieteni*, cf. *suprajurensis* p. 107, COLIVICCHI Mem. soc. tosc. sci. nat. 56A 1949; *T. cf. grandis* p. 16, HASSAN 64; *T. suteri* sp. nov. p. 143, *subsuteri* sp. nov. p. 150, *avuatensis* sp. nov. p. 154, *dresnayi* sp. nov. p. 155, d. var. *tecta* var. nov. p. 156, var. *ampla* var. nov., *subtermieri* sp. nov. p. 157, s. var. *atlantiformis* var. nov., *ifranensis* var. nov. p. 159, cf. *infranensis*, cf. *hebbriensis* p. 160, *paucicostata* sp. nov. p. 162, n. sp. (aff. *riberoi*, *kuntzi* sp. nov. p. 164, all figured, Middle Lias Morocco, COLO. Notes and Mém. Serv. Géol. Maroc. 117 1953; *T. sp.* figd., HENRIQUES DA SILVA 72 p. 2; *T. indentata*, *lycetti* figd. fig. 31, JORDANA & KINDELÁN 85; *T. dutempleana* p. 186 figd., MAKSIMOVIC & MARKOVIC 110; *T. dutempleana* figd. pl. 5, MARKOVIC-STEFANOVIC 112; *T. cf. hungarica*, *pachydentata* p. 33, MARWICK 113; *T. mobergi* figd. pl. 3, PASIC 138; *T. n. sp. ind.* p. 117 figd., *punctata* var. ind. p. 119 figd., RONCHETTI & BRENA 152.

†*Terebratula* (*Avonothyris*) *corrugata* recorded Somaliland p. 105, COLIVICCHI 22.

†*Terebratula* (*Bihenithyris*) *baringtoni* recorded Somaliland p. 105, COLIVICCHI 22.

†*Terebratula* (*Cererithyris*) *williei* [= *wyllei*] recorded Somaliland, COLIVICCHI 22 p. 106.

†*Terebratula* (*Charltonithyris*) *bihinensis* recorded Somaliland p. 105, COLIVICCHI 22.

†*Terebratula* (*Heimia*) sp., MARWICK 113 p. 85.

†*Terebratula* (*Loboidothyris*) *anaulites* p. 105, *vinassari*, p. 106 recorded Somaliland, COLIVICCHI 22.

†*Terebratula* (*Lophrothyris*) *longisinuata*, *subsella* p. 105, *pelagica* p. 106 recorded Somaliland, COLIVICCHI 22.

†*Terebratula* (*Plectoidothyris*) *bicanaliculata* p. 105, *ruspolii* p. 106, recorded Somaliland, COLIVICCHI 22.

†*Terebratula* (*Pseudoglossothyris*) *sulcata* recorded Somaliland, COLIVICCHI 22 p. 106.

†*Terebratula* (*Pygope*) *nucleata* recorded Somaliland p. 106, COLIVICCHI 22.

†*Terebratula* (*Striathyris*) *somalien-sis* recorded Somaliland p. 106, COLIVICCHI 22.

†*Terebratula* (*Wattoniathyris*) cf. *nunneyensis* p. 106, COLIVICCHI 22.

†*Terebratulina* sp. p. 17, HASSAN 64; *T. japonica*, *tohokuensis* figd. pl. 38, SHIKAMA 164; *T. caputserpentis*, VIGNEAUX & BUGE 186 p. 24; *T. chrysalis* Von Schlotheim 1813, with lectotype Faujas St. Fond 1797, pl. 26, fig. 9, said to be syn. *T. striata* Wahlenberg 1821 and *T. striatula* Mantell 1822, WIND 197.

TEREBRATELLACEA

MEGATHYRIDAE

†*Argyrotheca johnstrupi* Posselt 1894 said to be syn. *A. cimbrorum* Brunnich Nielsen 1928. and *A. saltmountainensis* Toulmin 1940; *A. faxensis* (Posselt) 1894 syn. *A. posselti* (Brünnich Nielsen) 1909 and *A. beecheri* (Clark) 1895, WIND 197.

†*Megathyris davidsoni* Bosquet 1860 said to be syn. *M. brünnichi* Rosenkrantz 1944, WIND 197.

DALLINIDAE

†*Coptothyris grayi* figd. pl. 38, SHIKAMA 164; *C. grayi* subsp. *amoriensis* recorded from Recent sea, also fossil Hokkaido, Japan, HAYASAKA & UOZUMI 69 p. 95.

Diestothyris frontalis p. 95 recorded from Recent seas and fossil, Hokkaido Japan, HAYASAKA & UOZUMI 69.

†*Terebratalia tenuis* figd. pl. 38, SHIKAMA 164.

†*Terebratula* (*Ismenia*) *hoeninghausi* p. 361 figd., GIGOUT 53.

LAQUEINIDAE

†*Kurakithyris quantoensis* figd. pl. 55, SHIKAMA 164.

TEREBRATELLIDAE

†*Magas chitoniformis* von Schlotheim 1813 said to be syn. *Magas pumilus* J. Sowerby 1818, WIND 197.

†*Nipponiathyris subovata* figd. pl. 38, *tayaensis* pl. 55, SHIKAMA 164.

†*Pachymagas gigantea* p. 131 figd., *tehuelcha* p. 132 figd. Upper Pliocene Patagonia, FERUGLIO 41.

Terebratella inconspicua, larval development described in 1944, compared with that of *Tegulorhynchia* former statement about orientation of pedicle valve emended and now said to be ventral like that of *Tegulorhynchia*, PERCIVAL 141 p. 436; *T. (vel Magellania) rolli* sp. nov. Upper Senonian or Danian Patagonia, FERUGLIO Pubbl. Inst. Geol. Univ. Torino 2 1953: 150 figd.

†*Yabeithyris kanazawaensis* figd. pl. 55, SHIKAMA 164.

INCERTAE SEDIS

ZEILLERIIDAE

†*Aulacothyris*? sp. p. 102 figd., DROT 36.

†*Terebratula* (*Ornithella*) *bat[h]onica* var. *bat[h]iensis*, *cinctaeformis*, *pupa* recorded Somaliland, COLIVICCHI 22 p. 105, 106.

†*Terebratula* (*Rugitela*) *emarginata* p. 105 recorded Somaliland, COLIVICCHI 22.

†*Waldheimia impressa* section through shell X45. U^r. Jurassic Impressa Clay, Württemberg, HAGN 62 p. 43 fig. 9.

†*Zeilleria galliinei* p. 107, recorded Somaliland, COLIVICCHI 22; *Z. aff. tenuiplicata* described from Gibraltar, MUIR-WOOD 127 p. 164.

INCERTAE SEDIS

†*Coenothyris* sp. figd., MARWICK 113 p. 34.

ERRATUM

TEREBRATULIDAE

†*Weldoniathyris* gen. nov. type species *W. weldonensis* sp. nov., MUIR-WOOD Proc. geol. Assoc. 63 2 1952 included incorrectly in Terebratellacea in Zool. Record for 1952.

